As Minister charged with the responsibility for co-ordinating government policy and its application in the North, I am pleased to present the 1981-82 edition of *Government Activities in the North*. This publication, published annually, continues to be of great value to researchers and others who want to keep themselves informed about the role of Government in Canada's North, as it is the only available consolidation combining reports of both federal and territorial government activities in the Yukon and Northwest Territories.

To describe the Government's role in the North as clearly as possible, this report is in narrative form. A companion publication entitled *Annual Northern Expenditure Plan*, also published by my department, indicates the level of expenditures applied against various categories relating to the Government's Northern objectives. Taken together, *Government Activities in the North* and *Annual Northern Expenditure Plan* record the nature and extent of government activities in Canada's North.

The Honourable John C. Munro,
Minister of Indian Affairs and
Northern Development.

# Introduction

The 1981-82 edition of Government Activities in the North is published in both official languages by the Department of Indian and Northern Affairs Canada.

This publication reports annually on government activities in the Yukon and Northwest Territories. In this report, federal departments, agencies, crown corporations and both territorial governments, outline northern responsibilities, review past year's activities and project plans for the fiscal year 1982-83.

This year's edition includes a very brief indication of the 1981-82 spending forecast for each department[1] and shows total direct northern spending as well as spending directed toward specific northern objectives. The seven northern objectives established by the federal government in 1971 are shown elsewhere on this page.

Much of the material used under Plans for 1982-83 had to be assembled in the latter part of the fiscal year 1981-82. By the time this publication is released, many of these will be accomplishments, while others will have been modified or abandoned. As a result, they are treated throughout as being in the future.

Government Activities in the North is a companion report to the publication Annual Northern Expenditure Plan. Together they form a complete source of information on all aspects of government activity in the North.

Both these publications are available from the Publishing Division, Department of Indian and Northern Affairs Canada.

**The Seven Northern Objectives**

1 Quality of Life — To provide for a higher standard of living, quality of life, and equality of opportunity for northern residents by methods which are compatible with their own preferences and aspirations.

2 Economic Growth — To encourage viable economic development within the regions of the northern territories so as to realize their potential contribution to the national economy and the material well-being of Canadians.

3 Sovereignty and Security — To maintain Canadian sovereignty and security in the North.

4 Protection of the Environment — To maintain and enhance the northern environment with due consideration to economic and social development.

5 Evolution of Government — To further the evolution of self-government in the northern territories.

6 Social and Cultural Development — To realize the potential contribution of the northern territories to the social and cultural development of Canada.

7 Leisure and Recreation — To develop fully the leisure and recreational opportunities in the northern territories.

It will be noted that, while there are seven northern objectives, there are actually eight categories of expenditure. The eighth category is "administration and support."Agency expenditures are allocated to administration and support when they contribute to the northern objectives by supporting other activities which contribute to the objectives.

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[1] Applies only to those departments which provide input to the Annual Northern Expenditure Plan.

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# Federal Departments and Agencies

# Department of Agriculture

## Food Production and Inspection Branch

### *Meat Hygiene Division*

***Review 1981-82***

The annual slaughter of reindeer, usually conducted in February or March, by the firm "Canadian Reindeer (1978) Limited" of Tuktoyaktuk, Northwest Territories, was carried out in early March 1982. Two veterinary inspectors from the Calgary office were assigned to inspect the carcasses and monitor the cleanliness of the Company's operations.

The Division is reviewing a proposal by the Committee for Original Peoples' Entitlement to provide inspection for muskoxen, and possibly caribou, in the future.

The Meat Hygiene Division is co-operating with people in the North to enable them to slaughter and process local animals for distribution to potential domestic and foreign export markets.

## Health of Animals Directorate

***Responsibilities***

Under the Animal Disease and Protection Act, Agriculture Canada is responsible for eradicating animal diseases that can be transmitted to domestic animals, particularly to those used for food. Because the number of domestic animals is very limited in the North, the Directorate's present activities relating to the North are very small. However, it hopes to be more active in the future, particularly as various agencies and non-government organizations seem to be more and more interested in the farming of game animals in the sub-Arctic regions.

***Review 1981-82***

The Directorate is carrying out a project entitled "Arctic Fox Studies: Rabies Infection and Age Structure from Trapline Returns". Brains from trapped Arctic Foxes are examined for rabies antigen and the age of the animals is determined by examining their teeth. Last year, 96 per cent of the submissions were from animals less than one year old, and only two out of 408 submission were positive. It is expected that this project will be terminated in 1982-83.

***Plans for 1982-83***

Work for 1982-83 will include a preliminary study to examine some aspects of brucellosis, tuberculosis, and anthrax in bison. The incidence of these diseases and these potential for spreading to domestic livestock as northern development progresses, will be investigated.

## Research Branch

### *Land Resource Research Institute*

***Responsibilities***

The institute is responsible for providing technical expertise for soil and vegetation surveys and for carrying out soil characterization and soil inventories in the North.

***Review 1981-82***

At the request of Environment Canada, the Institute carried out a soil inventory on the Arctic Islands in the Viscount Melville Sound area. A 1:1 000 000 scale soil landscape map of the area was prepared using satellite imagery for interpretation.

The National Museums of Canada requested a study of soils in the Old Crow area of the Yukon. The purpose of this study was to characterize the soils of both the archaeological excavation to aid in the archaeological interpretation of the sites and to characterize the paleo-environment of the area.

Technical and correlation support were provided for the Macmillan Pass resource mapping project of the Yukon Land Resource Inventory Group. In addition, the Land Resource Institute's soil laboratory is analyzing 354 soil samples collected during this field season.

The monitoring of soil temperatures continued at eight sites in the Inuvik-Arctic Red River area. The objectives of this study are to characterize the soil temperature regime, the thermal regime of the active layer, and the high sub-Arctic soil climatic region. The first two years of soil temperature data were analyzed and the results are to be published in the forthcoming book entitled *Northern Ecology and Resource Management*.

### Biosystematics Research Institute

***Review 1981-82***

An entomologist, an arachnologist, and a botanist carried out extensive surveys of insects, spiders, and vascular plants in the Yukon Territory. Several scientific papers dealing with specimens collected during recent years were published, and substantial progress was made in preparing major faunistic treatments of several families of insects and arachnids in Northern Canada and a flora of the Yukon. Scientists from the Institute contributed substantially to the volume *Arctic Arthropods* by H.V. Danks, published by the Entomological Society of Canada.

# Canada Mortgage and Housing Corporation

This report is compiled for the operating year January 1 to December 31, 1981.

***Responsibilities***

Canada Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the Territorial housing corporations and private non-profit organizations for new construction and for rehabilitating existing houses. Branch offices in Whitehorse and Yellowknife administer the Corporation's day-to-day activities.

***Review 1981***

*Yukon*

In 1981, CMHC introduced the Rural Residential Rehabilitation Assistance Program (RRAP) into the Yukon. The Council for Yukon Indians is the "delivery agent" (Client Representative Group) for Rural RRAP and for the Emergency Repair Program (ERP). During the year, both these Programs were used to improve and repair substandard housing. Twenty-nine homes were repaired under the Emergency Repair Program. A total of $26 200 of the Corporation's funds were used to cary out this work.

Under Rural RRAP $4 000 was committed to rehabilitate one house. Rehabilitation of three other houses was in the process of being approved. In addition, through the RRAP — DIAND funding for status Indians, three units in Liard were repaired at a total cost to CMHC of $12 000. The Council for Yukon Indians (CYI) receives an annual sustaining grant for its housing department to help in providing housing for natives. In 1981, CYI received a grant of $96 468. This money permitted considerable work to be done on developing a system for providing new housing under the Rural and Native Housing Program.

The Atlin, BC Indian Band built two houses under the private non-profit program with the Band Manager acting as the general contractor. The project was jointly funded by CMHC and DIAND. The Corporation committed $96 000 in capital funding plus an annual subsidy of $20 000 to this project.

During 1981, CMHC provided $6.5 million in NHA loan insurance on 180 units, including $2.0 million in loan insurance on one town housing project. The Corporation also provided a $73 000 direct loan in a remote area outside local Approved Lender's jurisdiction. Under the Canadian Home Insulation Program (CHIP), 431 grants totalling $181 000 were made to homeowners to assist them in upgrading the insulation in their homes.

**Inuit Non-Profit Housing Corporation Project in Lake Harbour**

*Northwest Territories*

During 1981, 253 housing units were financed under the National Housing Act. Of these units, 208 were financed directly by CMHC under the Northwest Territories Housing Corporation (NWTHC) Program. This Program was directed toward providing subsidized rental housing in many of the smaller and isolated communities in the Territories. It included the construction of 75 new units and the major rehabilitation of 133 older houses. CMHC funding to the NWTHC in 1981 totalled $12 million. In addition, CHMC handled 36 NHA insured loans — 28 for owner-occupied, and 8 for rental units.

Energy-conserving features and technology were incorporated in seven housing units — one each in seven communities in the Keewatin Region. These houses were part of a special demonstration project, and the Corporation has started to monitor energy savings and living comfort in the units. Residents from the communities participated at the design stage and are also involved in the ongoing monitoring work.

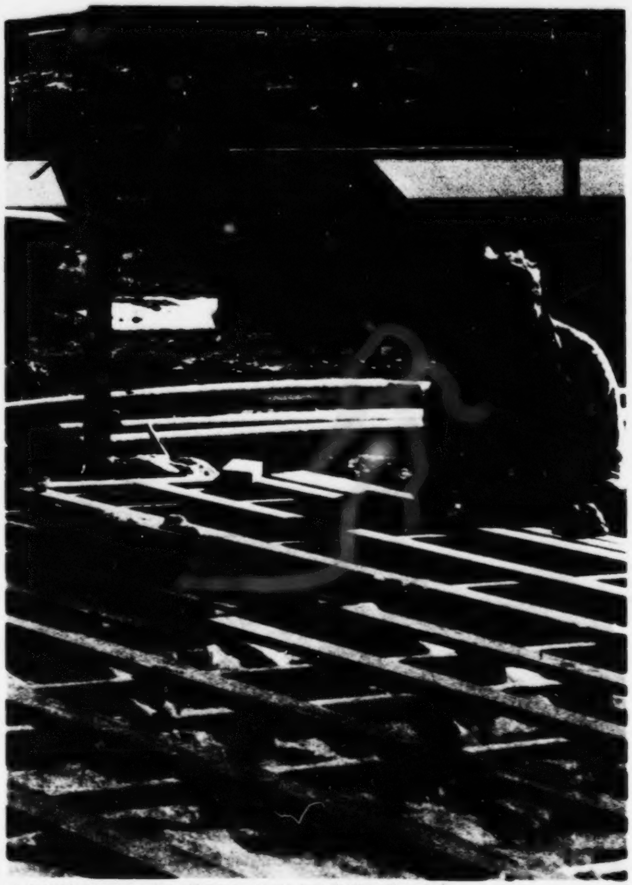
CMHC and NWTHC jointly sponsored two district housing conferences held in Inuvik in October and Hay River in November. These conferences brought together people from the smaller communities who are involved in managing public rental housing. The meetings provided an opportunity to exchange information, identify problems and propose solutions in an attempt to improve housing conditions and management techniques. CMHC also funded a Dene/Métis housing conference in Yellowknife in November.

Under the Canadian Home Insulation Program, 422 grants totalling $185 425 were made to homeowners to assist them in upgrading the insulation in their homes. During 1981, CMHC and NWTHC undertook a special Emergency Repair Program. A total of 52 of the older northern rental units in a number of smaller communities were upgraded and made more energy-efficient. In addition, 81 units in the Mackenzie Valley were upgraded through the co-operation of the Mackenzie Valley Housing Association. CMHC's contribution was $200 000 and $221 037 for the 52 and 81 units respectively.

The Mackenzie Valley Housing Association also assisted CMHC with the delivery of native housing programs in the Mackenzie District. A sustaining grant of $915 644 was made to the Association during 1981. Another sustaining grant of $137 262 was made to the Inuit Non-Profit Housing Corporation (INPHC) to help it represent the interests of the Inuit population north of the tree line. The efforts of INPHC showed significant results in 1981 with projects in Tuktoyaktuk, Cape Dorset and Lake Harbour.

*Total Activity Approved — 1981*

| | No. of Units | Amount $ 000 |
|---|---|---|
| Yukon (New and Existing) | 183 | 6 698 |
| (Rehab and Repair) | 33 | 42 |
| NWT (New and Existing) | 125 | 9 756 |
| (Rehab and Repair) | 273 | 5 445 |



Rehabilitation work in Rankin Inlet: insulating tin roofs

| Summary of Direct Northern Expenditures (000's) | $ | % |
|---|---|---|
| *Total Forecast 1981/82* | 2 648 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 2 648 | 100.0 |

# Canada Post Corporation

*Responsibilities*

On October 16, 1981, the Canada Post Corporation took over the operations of the Canadian mails from Canada Post. Like its predecessor, the newly formed Canada Post Corporation operates a large-scale processing and distribution business.

The Corporation provides a mail service at equal cost to all Canadians, not only along the well-established transportation networks in the south, but also to the remote areas north of 60 degrees latitude. There are now 81 post offices in the North.

Mail is delivered by a variety of means. For example, mail is delivered regularly by air to communities that have permanent, year-round air strips. In other locations, aircraft use ice strips in the winter months. In summer, these locations are served by either land routes or boat. Some northern residents receive their mail by "courtesy-bag" service; the Corporation processes the mail and places it in bags for mining companies or oil exploration companies to deliver to their personnel.

Two postal regions are responsible for mail service to the North. The Quebec Region is responsible for service to the eastern Arctic, with Montreal serving as the distribution centre. Mail originating in locations east of Winnipeg and addressed to Kuujjuaq (electoral district of Manicouagan), Frobisher Bay, Hall Beach, or Resolute is sent to Montreal, where it is processed and then forwarded by air. Mail originating west of Winnipeg for the eastern Arctic is gathered in Edmonton for dispatch by air service to Resolute.

The Western Region is responsible for postal service to communities in the Yukon, the District of Mackenzie and the District of Keewatin, as well as to Banks Island, Victoria Island, and the Boothia Peninsula in the District of Franklin. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel, but since it is an island in Hudson Bay, it is served by the northern service. Mail for the Keewatin District from all parts of Canada is gathered in Churchill. Dispatches for the District of MacKenzie are centralized and processed at Edmonton. Mail for the Yukon, depending on the originating points, is centralized in either Edmonton or Vancouver.

*Review for 1981-82*

Two new post offices were opened during the period. The first, at Lupin, Northwest Territories, provides service to people who work at Echo Bay's new mine on Contwoyto Lake. The second, Polaris, on Cornwallis Island, serves the employees of the Polaris mine operated by Cominco Ltd.

A new air service was established between Yellowknife and Frobisher Bay. It includes scheduled stops at Rankin Inlet. Another new international air service connects Frobisher Bay and Gothaab, Greenland. As a result of these services, Canada's first northern international exchange office was established at Frobisher Bay.

*Plans for 1982-83*

It is likely that developments in oil, gas, and other natural resources will result in significant increases in the population of the North over the next few years. The growth in population will create a demand for increased mail service. The Canada Post Corporation will maintain its close contact with local agencies so that new postal services can be introduced to meet new needs as they arise.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 11 370 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 5 685 | 50.0 |
| Economic Growth | 5 685 | 50.0 |

# Canadian Broadcasting Corporation

Weekly production in Inuktitut of the weekly quarter hour TV program *Tarqravut* began in Radio-Canada Montreal about nine years ago. For many years this production by Marie Tessier-Lavigne was the only northern television program conducted in Inuktitut. Mary Atchison, an occasional program host, greets three Inuit guests during one of the program's features.

**Northern Quebec**

On April 1, 1980, the Montreal production centre, which since 1958 had been the production centre for the entire Northern Service, began its first fiscal year as the centre for the new Quebec Northern Service.

This Service, comprising a dozen persons, immediately began to apply itself to increasing and diversifying its programs in Québec Inuit and Cree. In 1981-82, the Service added a two-hour program in both languages to its morning schedule. This addition brought the Service's weekly original production to about forty hours. The pan-northern program, *Isumavut*, a daily one-hour long phone-in show, continued with announcer-producer Elijah Ménarik. Ménarik also hosts the weekly television program *Tarqravut*, which has been produced in Montreal for the past ten years.

The year 1981-82 also saw CBC television transmitters installed in five main Inuit communities in Québec. A community radio package was set up in the Cree village of Lac Mistassini, and the Service began to work closely with the Attikamek-Montagnais radio production centre at the Huron Village. The Village's programs (one hour from Monday to Friday and two hours on Saturday) are broadcast on shortwave or by satellite, and then re-transmitted by twelve community stations.

The work of transcribing native music, which flourishes among Quebec's native peoples, gained new momentum with the recording of traditional Inuit music collected by the Museum of Man. As well, numerous Montagnais songs were recorded, as sung by the oldest members of the community.

Finally, the Québec Northern Service continued to work with the Department of Indian and Northern Affairs to provide training in radio production to native peoples.

The main news events and issues covered during the past year were the patriation of the Canadian constitution, the board elections for the Inuit Tapirisat of Canada, the visit of British Members of Parliament among the Cree, the inauguration of the new Indian village of Chisasibi, on James Bay and the problem of discrimination against Indian women.

## CBC Northern Service

***Responsibilities***

The Northern Service of the Canadian Broadcasting Corporation was established in 1958 to provide a broadcasting service to meet the special needs of Inuit, Dene, Métis, and non-native northerners.

*Radio*

There are five radio production centres in the North. Each produces programs for culturally and linguistically distinct audiences. Yellowknife, N.W.T. is the program centre for the Mackenzie region. Inuvik is the centre for the Delta, Frobisher Bay for the Baffin, Rankin Inlet for the Keewatin and Whitehorse for the Yukon.

Listeners in each of the sub-regions receive a combination of national and regional radio programs, delivered through earth or satellite networks and broadcast on local transmitters. CBC radio is available to 97 per cent of the people of the N.W.T. and to 92 per cent of the Yukon population, using either CBC-owned-and-operated equipment, or through community-owned affiliates.

About half of the northern settlements have formed community radio societies, which have access to the local transmitter at specified times of the day for airing their own programs. The Northern Service has provided the community radio equipment to the larger settlements, while the Northwest Territories Government has a similar program for the smaller ones.

Whitehorse, Yellowknife, Inuvik, and Frobisher Bay produce daily northern newscasts. Distinct morning shows and current affairs programs also originate from each centre. A listener in Frobisher Bay, Baker Lake, or Rankin Inlet can listen to programs in Inuktitut and English, while a Yellowknife or Rae-Edzo audience can tune into Dogrib, English, Slavey, or Chipewyan programs. In the Delta, CBC programs are broadcast in English, Inuvialuktun, Hareskin, and Loucheux. In contrast, CBC in Whitehorse broadcasts to a largely English-speaking population of native and non-native Yukon listeners.

The Northern Service also operates a radio production unit at The Chateau Laurier in Ottawa. It provides news and current affairs items for use by the northern stations.

***Review 1981-82***

The prolonged strike by NABET technicians and announcers had a marked effect on the operations of the Northern Service. Radio production was virtually shut down, although a reduced service of news, weather, and recorded music was maintained. Moreover, at the end of the strike a backlog of technical maintenance work had to be carried out.

In preparation for the N.W.T. plebiscite on division, news and current affairs staff at all locations contributed to six weeks of information programming that included historical perspectives, presentation of northern and southern viewpoints, and careful analysis of this historic issue. On two occasions, listeners throughout the North were invited to phone in on special open-line programs.

During the national constitutional debate, the entire Legislative Assembly of the N.W.T. travelled to Ottawa to lobby for aboriginal rights. The Northern Service produced a ninety-minute radio special simultaneously translated into the native languages, from the Ottawa production unit with Assembly members in the studio.

News and current affairs staff travelled widely to provide coverage of several key events, including the National Energy Board hearings, Beaufort Sea Environmental reviews, and the Inuit Tapirisat Annual Assembly in Nain, Labrador. An Inuit Services Committee of senior CBC Inuit staff was formed to oversee Inuktitut language programming for the Eastern Arctic and Keewatin regions, and to provide liaison with northern Quebec.

The Northern Service produced four long-playing record albums featuring northern musicians. These broadcast recordings are made available to radio stations and community access groups. Plans are underway to arrange for the commercial marketing of some of these albums.

A strong emphasis was maintained on staff training in a number of areas, including the continuation of intensive native language sessions for Inuit broadcasters.

The Northern Service provided both written and oral presentations to the Applebaum-Hebert Federal Cultural Policy Review Committee, outlining the effects of electronic media on northern cultures.

During the bi-annual Arctic Winter Games, held this time in Alaska, live daily broadcasts were produced in Fairbanks for distribution throughout the North.

"Tausonii" is produced in Frobisher Bay. Baffin Regional Inuit Association President Simon Awa (left) and the Deputy Mayor of Frobisher Bay Paulooise Kilabuck (seated, right) came to the studio in September 1981 to talk about Inuit leadership. Co-host is Moses Atagoyuk, (right).

Under the CBC's Accelerated Coverage Plan, the N.W.T. community of Gjoa Haven was provided with CBC radio service, via satellite.

***Plans for 1982-83***

At the end of 1982, all northern staff benefits (such as subsidized housing and isolated post allowances) will be subject to taxation. We will be working with other federal employers in order to prepare for the impact of this new legislation.

The Service expects to improve the Dene language program service from our Yellowknife and Inuvik production centres. Early in the new year, we will begin a new noon hour program from Inuvik. It will be broadcast simultaneously in Inuvialuktun and Hareskin. We will also be broadcasting a new afternoon multi-lingual information program for our Slavey, Dogrib, Chipewyan audience from Yellowknife.

We are adding an Inuktitut news and current affairs program service in our Ottawa Production Unit, to cover southern activities related to the North. Program material will be incorporated into existing programs and distributed to our Inuit audience form Frobisher Bay and Rankin Inlet. This service was scheduled for last year, but was delayed.

The Frobisher Bay Production Centre will be shifting from producing a bi-lingual English and Inuktitut morning show, to a unilingual new noon hour program co-hosted by both the Rankin and Frobisher Bay centres.

A Dene language broadcasters' training program (similar to the "PUUQ" program for our Inuit staff) will be introduced this summer in Yellowknife. The course will last one week and will cover a range of subjects, including language, cross-cultural awareness, and broadcasting skills. This course will be our first attempt at establishing specialized training for our Dene broadcasters.

The Northern Service will begin implementing a new recruitment and staff orientation system. Its objectives are, first, to recruit employees who are more suited to broadcasting work in the North and, second, to better equip current employees to do their jobs. New techniques in screening and selection, and more specific orientation and training, are the main elements of this system.

We are upgrading our Frobisher Bay radio AM signal from 250 watts to 1 kw. This additional power will greatly improve the quality of our signal to the community and surrounding areas.

The Northern Service is conducting a study of the full range of benefits provided to our employees in the North to ensure that staff are treated equitably in relation to the employees of other northern agencies.

### *Television*

The Northern Service has a small production centre in Yellowknife with both film and electronic cameras and editing facilities. Program production includes in-studio and remote work. There are, however, no satellite "up-linking" facilities, with the result that all programming produced and recorded in Yellowknife must be shipped south to Toronto in order to be broadcast back to the North via Anik satellite.

This is the television studio in Yellowknife.

The Yellowknife centre produces a weekly half-hour television series and a number of special or feature programs annually. Television staff based in Ottawa arrange the scheduling and promotion of our programs and purchase programming from a variety of sources in Canada and internationally to be shown in the North. A production unit in Montreal produces "Tarqravut" a weekly 15-minute program in Inuktitut.

Like radio, CBC television is available to well over 90 per cent of northern households. However, beyond the small amount of television programming either produced or procured by the Northern Service as noted above, the television service consists of national network programs from southern Canada. The Northern Service does not have its own dedicated satellite channels for television distribution. It receives the network's main Maritime and Pacific channels and must share the regional time available in those channels with other regional television services in Eastern and Western Canada.

### ***Review 1981-82***

The Yellowknife-produced weekly series "Our Ways" was delayed three months from its normal fall season opening as a result of the NABET strike.

In November of 1981, the TV unit produced a special half-hour current affairs program on the constitutional debate, featuring the N.W.T. Legislative Assembly's dramatic visit to Ottawa.

Additional current affairs programming was produced toward the end of the year in preparation for the plebiscite on the division of the N.W.T. This material was broadcast in a series of six half-hour programs — three in English and three in Inuktitut.

During the Arctic Winter Games in Fairbanks, Alaska, the Northern Service offered daily television coverage to northern viewers. A remote production crew was sent to Alaska, and satellite facilities were used to relay the programs from Fairbanks to Toronto, and then back to the Canadian North.

The Northern Service expanded its working relationship with the Inuit in the eastern Arctic and northern Quebec by entering into a co-operative agreement with the Inuit Broadcasting Corporation (IBC). Under the terms of this agreement, the CBC makes available its satellite distribution network for specified times each week to allow IBC to transmit its own television programs to the North. IBC is an independent television production company, operated by the Inuit with funding from the federal government. It operates production facilities in Salluit (Quebec), Frobisher Bay and Baker Lake (N.W.T.). By the end of the year, IBC was producing approximately three hours of original television programming each week in Inuktitut. These programs were being transmitted to the North by satellite from Toronto, but plans were underway to establish a satellite transmitter in Frobisher Bay to allow for direct northern access to the distribution network.

An audience survey was conducted in two Baffin Island communities to assess the television viewing behaviour and preferences among Inuit in the eastern Arctic. In the West, community representatives from several settlements were invited to Yellowknife and Whitehorse to view and comment on samples of the Service's original television production. Through audience research and public screenings, the Northern Service obtains valuable information and feedback from viewers, which in turn helps the Service to plan and evaluate its work.

***Plans for 1982-83***

We will be increasing our northern television production, in a modest way, beginning next fall. We will continue to produce our existing weekly current affairs program and will add a new weekly half-hour pan-northern current affairs show produced in our Yellowknife studios. The existing program will continue to reflect northern culture and to include native languages. However, its format will shift from a magazine-style format to a series of single-subject half-hour programs on film. The new current affairs program will deal with current issues in the political, economic and social areas.

Tarqravut production resources will be relocated from Montreal to Ottawa in the fall. We will begin producing this weekly Inuktitut program from the CBC Ottawa studios. This move will provide a more suitable location from which to cover southern activities either related or important to the North.

Our arrangement with the Inuit Broadcasting Corporation will continue, and we will provide access time on our satellite delivery system from the IBC's Frobisher Bay facility. Although we are able to accommodate the current volume of IBC's production, additional programming will be difficult to broadcast. Our delivery system is also the network's main "trunk line" for southern distribution, and our use is restricted to times when the network is inactive, usually outside of prime time.

We have scheduled a series of public meetings in the Baffin and Keewatin to gather audience feedback on our current programmming and to prepare for our new pan-northern current affairs show. We expect to continue this form of evaluation and feedback with other groups as well.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 11 239 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Social and Cultural Development | 6 181 | 55.0 |
| Quality of Life | 3 934 | 35.0 |
| Evolution of Government | 562 | 5.0 |
| Protection of the Environment | 562 | 5.0 |

# Canadian National Railway

### Responsibilities

CN is responsible for providing transportation and telecommunication services to the North. Historically, this responsibility has entailed operating transportation services to mining and forest industries and to exploration and construction projects, as well as providing telecommunications to the residential and commercial sectors. Consultation services have also been provided for the logistical planning of pipelines, rail lines and other studies.

### Review 1981

Demand for CN's transportation services in 1981 was similar to that of the last few years. While traffic volumes still have not returned to the highs of the early and mid-1970's, they remain above the lows of 1978.

The major CN Rail Traffic originating in the Northwest Territories has continued to consist of lead-zinc concentrates from Pine Point Mines, Pine Point, N.W.T. Most of the rail traffic destined for the N.W.T. is used for northern community re-supply and for exploration work in the Beaufort Sea. These cargoes are transferred to barges at Hay River for shipment to points along the Mackenzie River System and the North Coast.

In 1981, CN's telecommunications subsidiary, NorthwestTel Inc. expanded and extended its operations in several areas.

Construction started on an upgrade project to expand the Whitehorse-Mount Berdoe (Carmacks) radio system from 300 to 960 voice channel capacity. Completion is scheduled for 1982.

Construction also started on a new microwave extension to the Alaska Panhandle, for communications traffic between Alaska and the lower 48 states of the U.S.A. Antenna tower and plant work commenced at Fraser (Carcross) and similar work was undertaken on the associated upgrade of the microwave system between Whitehorse and Beaver Creek.

The Hay River-Fort Providence microwave upgrade was completed in March 1981, providing an additional 960 voice channels.

In August 1981, a 120 channel tropospheric scatter radio relay system was brought into service between Hay River and Fort Smith. The system replaced an open wire pole line.

A new microwave system was placed in service in the Mackenzie Delta between Sunny and Hooper Island, for lease to Dome Petroleum Limited to carry off-shore traffic to that company's Tuktoyaktuk base camp.

A project to extend public mobile telephone service to Fort Ware was started. When it is completed in 1982, the service will work into the Fort Nelson centre.

At several locations, mechanical teleprinters for the Ministry of Transport were replaced by modem video display terminals and printers.

Automatic Number Identification (ANI) was installed at Dawson City, Norman Wells and Watson Lake, to facilitate direct dialing of long distance calls.

The telephone exchange at Faro was expanded from 800 to 1000 lines.

Preparatory work began on replacing the local and toll switching equipment at Fort Nelson.

New long distance toll switching equipment was placed in service at Hay River in June 1981. Most operator-handled traffic now is routed to the Whitehorse toll operator positions (TOPS).

A new 600 line electronic exchange was commissioned at Tuktoyaktuk, with a financial guarantee from Dome Petroleum Limited.

Equipment to provide touch-tone push button dialing service was installed at Cambridge Bay, Dawson City, Elsa, Aklavik, Rae, Fort McPherson, Norman Wells, and Tungsten.

The capacity of telephone exchanges at Dease Lake, Fort Liard, Mayo, Haines Junction and Pine Point was expanded during 1981.

Direct In-Dialing (DID) and Out-Dialing (DOD) equipment was placed in service at Wrigley, Enterprise and Fort Liard.

The installation of telephone exchanges and distribution cable was completed at Lac La Martre and Rae Lakes. Radio relay facilities are under construction with completion scheduled for the spring of 1982. This project, which is being carried out with financial assistance from the Department of Communications under the Northern Communiciations Assistance Program, will provide local and long distance telephone services to the two communities for the first time.

*Statistics at December 31, 1981*

| | Telephone Exchanges | Main Stations | Total Telephones |
|---|---|---|---|
| B.C. | 12 | 3094 | 5419 |
| Yukon | 18 | 10248 | 16779 |
| N.W.T. | 33 | 12531 | 19802 |
| Total | 63 | 25873 | 42000 |

| | |
|---|---|
| Communities | 59 |
| Direct Distance Dialing | 99.9% |
| ANI | 82.3% |
| Touch-tone Availability | 91.5% |

### *Plans for 1982*

During 1981, Cadillac Explorations Limited has continued to develop its lead-zinc-silver property and smelter 160 km northwest of Fort Simpson in the Nahanni area. CN Rail expects to provide the transportation facilities for delivering the lead and zinc concentrates to southern Canadian smelters and export positions. Production is expected to begin in mid-1982 and, by 1983, volumes of approximately 91 000 tonnes are forecast.

In late 1982, CN Rail also expects to deliver construction materials for building Esso Resources' 30.5 cm oil pipeline from Norman Wells, N.W.T. to Zama Lake, Alberta.

NorthwesTel will continue to improve and expand its facilities in 1982. During the year, an upgrade in capacity of the microwave system between Whitehorse and Beaver Creek will be completed. A new microwave extension to the border of the Alaskan Panhandle near Fraser, B.C. will also be placed in service. This extension will permit the interchange of telephone traffic with Alascom Inc.

The microwave system between Whitehorse and Mount Berdoe will be expanded from 300 to 960 channels in 1982. Construction of a radio system from Dease Lake to Iskut will be started. Work on the system will be completed in 1983.

The Fort Smith telephone exchange will be replaced in 1982 with solid-state electronic equipment. The existing cross-bar exchange will be dismantled and used to expand similar exchanges at Norman Wells, Tungsten, Cassiar, Dawson City and Carcross.

Local and long distance telephone service will be provided in 1982 at Lac La Martre and Rae Lakes, and automatic number identification equipment will be installed at Haines Junction, Cambridge Bay and Tungsten.

# Canadian Transport Commission

## Air Transport Committee

### *Responsibilities*

The ATC licenses air carriers to provide commercial air services and provides economic regulation of air carriers. It also monitors the operations of commercial air services in Canada and advises the Minister of Transport on civil aviation matters.

### *Review 1981-82*

DEW line contracts were awarded to Pacific Western Airlines Limited (PWA) and Nordair Limited for the north-south and east-west airlifts respectively.

The following chart shows the classification system that the Commision uses in its licensing activities, described in subsequent paragraphs.

**Classification**

| Class: | Commercial service (domestic) |
|---|---|
| 1 | scheduled |
| 2 | regular specific point |
| 3 | specific point (consistent with traffic requirements) |
| 4 | charter |
| 7 | speciality |
| | Commercial service (international) |
| 8 | scheduled |
| 9-2 | regular specific point |
| 9-4 | charter |

**Aircraft groups according to weight**

| | |
|---|---|
| A to H | light to heavy |
| A-RW | rotating wing - light |
| C-RW | rotating wing - medium |

**District of Keewatin**

Public hearings were held in Rankin Inlet, N.W.T. and Churchill, Man. to consider the adequacy of commercial air service to, from and within the District of Keewatin and all related applications thereto.

*Authorities granted*

*Calm Air International Ltd.*

Approve an application for rescission of the continuing waiver granted to Lambair Ltd. in respect of its Class 4 licence to charter from a base at Churchill, Manitoba to freight forwarders obtaining a toll per unit.

Amend a Class 4, Group C licence to operate a charter service from a base at Rankin Inlet, N.W.T. by adding authority to use Group E aircraft, and direct that Rankin Inlet, N.W.T. be designated as an "open point" with respect to Class 4, Group E operations.

Authority to serve the additional points Churchill and Lynn Lake, Manitoba and Cullaton Lake, N.W.T., the licensee being retricted to the use of aircraft in Groups C and E.

*Lambair Ltd.*

Amend a condition of a Class 4 licence to operate charter services from a base at Churchill, Manitoba by deleting the numerical and type restriction on its Group E operations.

*Keewatin Air Ltd.*

Amend a licence which authorizes Class 4 charter and Class 7 specialty services with Groups A and B from a base at Rankin Inlet, N.W.T. by adding Group C.

**Yukon Territory and central and western Northwest Territories**

Public hearings were held in Whitehorse, Y.T., Inuvik and Yellowknife, N.W.T., to consider the adequacy of commercial air services in the area formerly served by Northward Airlines Limited and to hear evidence pertaining to several applications for and notices of proposals of transfer of commercial air services in the Yukon Territory and the northwest Territories. In its decision, the ATC stated that "the commercial air service needs of the Yukon Teritory and central and western Northwest Territories can best be provided by distributing the authorities among several carriers rather than concentrating much of the authority in the hands of one carrier."

*Authorities granted*

*Simpson Air Ltd. (The Northern Commuter)*

Amend a Class 3, Groups A, B and C licence to serve Fort Simpson, Fort Liard, Nahanni Butte and Wrigley, N.W.T., Fort Nelson, Fort St. John and Dawson Creek, B.C. by adding the point Yellowknife, N.W.T.

*Ram Air Charter Ltd.*

Authority to operate a Class 3, Groups A and B service between Fort McPherson, Aklavik, Tuktoyaktuk and Inuvik, N.W.T. and Old Crow, Y.T.

*Aklavik Flying Service Ltd.*
Authority to operate a Class 3, Groups B and C service between Inuvik, Fort McPherson, Aklavik, Tuktoyaktuk, Sachs Harbour, Cape Perry and Paulatuk, N.W.T.

*Nahanni Air Services Ltd.*
Authority to operate a Class 3, Groups A, B and C service between Norman Wells, Fort Franklin, Fort Good Hope, Fort Norman and Inuvik, N.W.T.

*Northwest Territorial Airways Ltd.*
Amend a Class 3 licence to serve Yellowknife, Hope Lake, Port Radium/Sawmill Bay, Coppermine, Holman Island, Melville Island, Lady Franklin and Cambridge Bay, N.W.T. by adding the points Gjoa Haven, Spence Bay and Pelly Bay, N.W.T. and deleting the following conditions: a) in serving Holman Island, the licensee had been restricted to the carriage of traffic between Holman Island and Melville Island on unit toll flights between Yellowknife and Melville Island; b) in its service from Yellowknife to Coppermine, the licensee had been restricted to flights that proceed beyond Coppermine to Lady Franklin and/or Cambridge Bay and return directly to Yellowknife; and c) in its service from Yellowknife to Cambridge Bay, the licensee had been restricted to flights that proceed beyond Cambridge Bay to Lady Franklin and/or Coppermine and return directly to Yellowknife.

Amend a Class 2 licence to serve Yellowknife, Cambridge Bay and Coppermine, N.W.T. restricted to the use of four aircraft in Group D and four aircraft in Group F, by adding the point Holman Island, N.W.T. and deleting the following conditions: a) in its service from Yellowknife to Coppermine, the licensee had been restricted to flights that proceed beyond Coppermine to Cambridge Bay and return directly to Yellowknife; and b) in its service from Yellowknife to Cambridge Bay, the licensee had been restricted to flights that proceed beyond Cambridge Bay to Coppermine and return directly to Yellowknife.

*Northward Airlines Ltd. and Kenn Borek Air Ltd.*
Disallow a proposal by Northward Airlines Ltd. (by its Trustee in Bankruptcy, Touche Ross Limited) and by Kenn Borek Air Ltd. to transfer certain commercial services or portions thereof from the former to the latter.

Cancel a Class 4, Group C service from a base at Cambridge Bay, N.W.T., a Class 4, Group C service from a base at Yellowknife, N.W.T.; a Class 3, Groups B, C and E service between Dawson, Old Crow, Clinton Creek, Mayo and Whitehorse, Y.T., Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Fort McPherson, N.W.T.; a Class 2, Groups B and C service between Norman Wells, Fort Norman, Fort Franklin, Fort Good Hope, Fort McPherson, Aklavik, Inuvik and Tuktoyaktuk, N.W.T.; a Class 3, Groups C and E (restricted to Fairchild F-27 type aircraft in Group E) service between Cambridge Bay, Gjoa Haven, Spence Bay, Pelly Bay, Repulse Bay, Sachs Harbour, Holman Island, Coppermine, Yellowknife, Norman Wells, Fort Norman, Fort Franklin, Wrigley and Fort Simpson, N.W.T., Watson Lake and Whitehorse, Y.T.

Authority granted to *Kenn Borek Air Ltd.* to operate a Class 3, Groups C and D service between Inuvik, Aklavik, Tuktoyaktuk, Fort McPherson, Paulatuk and Sachs Harbour.

*Northward Airlines Ltd. and Trans North Turbo Air Ltd.*
Disallow a proposal by Northward Airlines Ltd. (by its Trustee in Bankruptcy, Touche Ross Limited) and by Trans North Turbo Air Ltd. to transfer certain services or portions thereof from the former to the latter.

Cancel a Class 4, Group E (limited to Fairchild F-27 type aircraft) service from a base at Whitehorse, Y.T.; a Class 9-4, Group E international charter service from a base at Whitehorse, Y.T.; a Class 2, Groups C and E (limited to Fairchild F-27 type aircraft in Group E) service between Whitehorse, Mayo, Dawson, Y.T., and Inuvik, N.W.T.; a Class 3, Groups B, C and E service between Dawson, Clinton Creek, Old Crow, Mayo and Whitehorse, Y.T., Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Fort McPherson, N.W.T.

Authority granted to *Trans North Turbo Air Ltd.* to operate a Class 2, Groups B, C and D service between Whitehorse, Mayo, Dawson and Old Crow, Y.T., and Inuvik, N.W.T. with a three-year prohibition applicable to Class 4 licensees to carry traffic between any points on this route.

*Beaufort Flying Service Limited*
Dismiss application by Beaufort Flying Service Limited for deletion of a condition of its licence.

*Simpson Air (1981) Limited*
Authority granted to Marshall Stanley, Paul Jones, Margaret Ann Belair, Noreen Ada Grant and Edward James Grant, proposing to incorporate a company to be known as Simpson Air (1981) Limited, to operate a Class 4, Groups A and B charter service from a base at Cambridge Bay, N.W.T.

*Air North Charter and Training Ltd.*
Waive in part a prohibition attached to a Class 4 licence to permit Groups A and B service between Whitehorse, Mayo and Dawson, Y.T. and Inuvik, N.W.T., this waiver being granted for a period of three years.

*Alkan Air Ltd.*
Waive in part a prohibition attached to a Class 4 licence to permit Groups A and B service between Whitehorse, Mayo and Dawson, Y.T., and Inuvik, N.W.T., this waiver being granted for a period of three years.

### Others

*Beaufort Flying Service Limited*
Transfer of shares of Beaufort Flying Service Limited authorized to operate a Class 4, Group A service from a base at Tuktoyaktuk, N.W.T. from Cecil E. Rilling to Herschel Island Transport Ltd.; suspend Classes 4 and 9-4 licences to operate charter services from a base at Tuktoyaktuk, N.W.T., said licences to be cancelled if the licensee fails to reinstitute the services by Aug. 31, 1982.

*Bradley Air Services Limited (First Air)*
Amend a Class 3, Groups C and D licence to serve Frobisher Bay, Broughton Island, Pangnirtung, Cape Dyer, Cape Dorset, Coral Harbour, Clyde River (Cape Christian), Igloolik, Hall Beach, Pelly Bay, Repulse Bay, Arctic Bay/Nanisivik and Pond Inlet, N.W.T. by deleting a prohibition from carrying local traffic between Pelly Bay and Repulse Bay and by cancelling the point Cape Dyer, N.W.T.; amend a Class 4, Groups A, B, C, D and E charter service from a base at Resolute Bay, N.W.T. by suspending the Group A authority.

*Buffalo Airways Ltd.*
Authority to operate a Class 3, Group D service between Hay River, Pine Point and Fort Smith, N.W.T. with the prohibition from providing non-stop service between Hay River and Fort Smith; authority to add a Class 7, Group A service to its license; amend a Class 4, Groups A-RW and a Class 7, Group A-RW licences by authorizing Class 4 and 7 services in Groups A-RW, B-RW and C-RW.

*Calm Air International Ltd. (Calm Air)*
Amend a Class 3, Group E service between Churchill, Manitoba, Baker Lake, Rankin Inlet, Coral Harbour, Hall Beach and Yellowknife, N.W.T. by cancelling the point Hall Beach.

*Fort Smith Air Service Ltd.*
Transfer of shares of Fort Smith Air Service Ltd. from Frank G. Tupper to Charles LeRoy Schaefer; lift suspension of a Group C authority under a Class 4 and 7, Groups A, B and C licence to operate from a base at Fort Smith, N.W.T.

*Inuvik Coastal Airways Ltd.*
Transfer of shares of Inuvik Coastal Airways Ltd. from Tuk Traders Ltd. to Mervin McKerral; the licensee operates a Class 4, Group C charter service from a base at Inuvik, N.W.T.

*Kenn Borek Air Ltd.*
Cancel a Class 4, Group D service from a base at Frobisher Bay, N.W.T.; amend a Class 4 and 7, Groups A, B, C and D service from a base at Resolute Bay, N.W.T. by cancelling the Group A authority; amend a Class 9-4, Groups A, B, C and D international charter licence by cancelling the Group A authority.

*Klondyke Air Charter Services Ltd.*
Suspend a Class 4, Groups A and B charter service from a base at Dawson, Y.T.

*Koenen's Air Service Limited*
Amend a Class 4, Groups A, B and C service from a base at Yellowknife, N.W.T. by suspending the Group B authority.

*L & A Aviation Ltd. (Landa Aviation)*
Amend a Class 4, Groups A and B licence authorizing a service from a base at Hay River, N.W.T. by changing the name of the licensee to L & A Aviation Ltd. carrying on business under the firm name and style of Landa Aviation.

*Lambair Limited*
Suspend a group of licences under Classes 3, 4 and 9-4.

*Ontario Central Airlines Ltd.* is granted a waiver from the Class 4 Positioning Charges Regulations with respect to charter operations from the points Thompson and Churchill, Manitoba using DC-3 aircraft.

*Normair Limited*
Cancel a Class 4, Group A charter service from a base at Pine Point, N.W.T.

*Northward Airlines Limited*
Transfer of a service between Norman Wells, Fort Norman and Fort Franklin, N.W.T. from Northward Airlines Limited to Nahanni Air Services Ltd. but on a Class 3 basis.

*Northwest Territorial Airways Ltd.*
Amend an experimental Class 2, Group F licence to serve Yellowknife, Rankin Inlet and Frobisher Bay, N.W.T. by granting permanent authority; amend a Class 3, Groups D and F service between Yellowknife, Hope Lake (suspended), Port Radium/Sawmill Bay (suspended), Coppermine, Holman Island, Melville Island, Lady Franklin, Cambridge Bay, Gjoa Haven, Spence Bay and Pelly Bay, N.W.T. by cancelling the authority to serve the point Melville Island.

*Pacific Western Airlines Limited*
Amend a Class 2, Group F licence to serve Winnipeg, Manitoba, Yellowknife, N.W.T. and Whitehorse, Y.T. by cancelling the authority to serve Winnipeg; subsequently cancel the entire service.

*Page Flight Services Ltd.*
Transfer of shares of Page Flight Services Ltd. from Michael Eugene Regan to Norwell Developments Ltd.; the licensee is authorized to operate Class 4 and 7 services from a base at Norman Wells, N.W.T.

*Ptarmigan Airways Ltd.*
Waiver of a condition attached to a Class 3 licence authorizing service between Yellowknife, Snowdrift, Lac la Martre, Rae Lakes, Fort Resolution, Pine Point and Hay River, N.W.T. to permit a direct Friday night and Sunday service between Yellowknife and Hay River, for a period of one year.

*Simpson Air Ltd.*
Amend a Class 3, Groups A, B and C licence to serve Fort Simpson, Fort Liard, Nahanni Butte and Wrigley, N.W.T., Fort Nelson, Dawson Creek and Fort St. John, B.C. by changing the name of the licensee to Simpson Air Ltd. operating under the firm name and style of The Northern Commuter; transfer of a Class 4, Group A service operated from a base at Fort Liard, N.W.T. to Urs and Marianne Schildknecht proposing to incorporate a company to be known as Liard Air Limited: transfer of a Class 4, 7 and 9-4, Groups A, B and C service operated from a base at Fort Simpson, N.W.T. to Simpson Air (1981) Limited.

*Spur Aviation Ltd.*
Authority to add recreational flying services to a Class 7 flying training licence.

*Terr-Air (Territorial Airways) Ltd.*
Transfer of shares of Terr-Air (Territorial Airways) Ltd. from John William Rolls and Margaret Rolls to Explorair Helicopters Ltd.; the licensee is authorized to operate a Class 4, Group A-RW service from a base at Ross River, Y.T.

*Totem Air Limited*
Transfer of shares of Totem Air Limited to I.M.S. Ltd., John Richard (Bud) McBride and Robert S. McBride to Robert H. Martin, George S. Czirjak, Robert Simmons and Robert G. Martin proposing to incorporate a company to be known as Chad-Commercial Helicopters Inc.

*Trans North Turbo Air Ltd.*
Temporary authority to charge unit tolls between Whitehorse and Yellowknife under a Class 4, Groups A, B, C and D licence; amend a group of licences by changing the name to Trans North Turbo Air Limited operating under the firm name and style of Trans North Air.

*Wardair Canada (1975) Ltd.*
Cancel Class 4, 7 and 9-4 licences to operate services from a base at Yellowknife, N.W.T.

*Whitehorse Flying School Limited*
Amend a Class 4, Group A and Class 7, Groups A and B licences to operate a service at Whitehorse, Y.T. by suspending the Group B authority.

**Water Transport Committee**

***Responsibilities***
*a) Under the Transport Act*
The WTC administers the Transport Act which governs the transport of goods and passengers by ship from one port or place in Canada to another in respect of any sea or inland water for which the Act has been proclaimed to be in force by the Governor in Council.

***Review 1981-82***
For the 1981 season, the Commission considered seven applications for water transport licences for the Mackenzie River watershed and the Canadian western Arctic. It approved 5 licences in favour of 231 vessels with a total of 195 000 gross tons. Two applications were withdrawn.

**Licences approved**

*Mackenzie River Watershed*
Cooper Barging Services Ltd.
Northern Transportation Company Limited
Arctic Transportation Ltd.
Norsask Marine Ltd.
Len Cardinal Transport Ltd.

*Canadian Western Arctic*
Northern Transportation Company Limited
Arctic Transportation Ltd.

*b) Coasting Trade*
The WTC is responsible under the Coasting Trade Exemption Regulations made pursuant to Part XV of the Canada Shipping Act for advising Revenue Canada whether there are suitable Canadian ships available to carry out work that a ship under a foreign flag has applied to perform in Canadian waters. In 1981, the Commisison received applications to allow two foreign flag dredges, GEOPOTES IX and AQUARIUS, to work within Canada's 12 mile limit in the Beaufort Sea. On each occasion, the Commission advised Revenue Canada that there were no suitable Canadian ships available, and temporary entry was permitted.

# Department of Communications

## *Responsibilities*

The Department of Communications, in fostering the development and operation of telecommunications for Canada, acknowledges the particular needs of northern Canadians when developing national communications policies and programs. The Department promotes the development of efficient northern communication facilities and helps northern Canadians adjust to rapidly changing conditions.

The Department of Communications continues to be responsible for handling all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the District Offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.

## *Review 1981-82*

Throughout 1981-82, the Department was involved in experimental and operation work in the North and participated in a number of joint ventures with other government departments and private groups.

The Department plays a major coordinating role in northern communications planning. Much of the Department's interdepartmental involvement is administered through its committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon sits on the Federal Interdepartmental Co-ordinating Committee (FICC) in Whitehorse and Chairs the Communications Sub-committee of the FICC. The DOC district manager for Yukon sits on the Federal Interdepartmental Co-ordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-committee of the FICC. The DOC Central Region Director, who holds responsibility for the N.W.T. and the Prairie Provinces, is a member of the N.W.T. Coordinating Committee in Yellowknife and chairs that Committee's Standing Group on Communications.

In 1981-82, the Central Region continued its participation in the Summer Job Corps, a shared program with the Department of Employment and Immigration. The program operates in Northern Manitoba and Saskatchewan as well as the N.W.T. and has been useful in providing basic training in communications and in introducing young people to careers in communications. With the program completely decentralized to the District Office level within the N.W.T., DOC has created a number of training positions in communications. Native students have filled many of these, which has helped the Department to meet its objectives of broadening the use of community people trained in communications. The long-term potential of this program lies both in developing new staff trained in communications and in reducing unemployment.

The Central Region recently hired four new radio inspectors. The hiring resulted from a pilot project in Fort Smith, N.W.T., geared to provide employment opportunities in the North for northerners. The new inspectors graduated from both the Fort Smith Adult Vocational Training Centre's (AVTC) one year electronics program, program, and an enrichment course provided by the Department of Communications at its monitoring station at Fort Smith.

This experimental low-cost earth terminal is one of several located throughout the North.

The enrichment program included courses in electronic communications and mathematics, as well as written and oral communication. It consisted of theoretical as well as practical sessions, and was developed by inspectors at Fort Smith and the regional training officer. The program ran daily for nine weeks.

As part of the equal opportunities program, the Central Region staffed the recently created permanent position of Manager, Native Projects. This new position helps respond to native communications concerns throughout both the N.W.T. and the Prairie Provinces.

Over the past three years, the Department, has been involved in several experiments using the Anik-B satellite. These experiments have had significant implications for the future of native programming and the extension of basic television services in the far north. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency band. DOC has leased this high-frequency portion for its pilot projects. These projects in the North, initiated during 1980-81, were extended into 1981-82.

"Inukshuk", the name of the project formulated by Inuit Tapirisat of Canada (ITC), with assistance from the federal Departments of Communications and DIAND, started in September 1980 and continued until May 1981. "Inukshuk" involved two-way communications and teleconference links to meet the needs of Inuit communities in the Territories.

Satellite earth stations were located in Eskimo Point, Pond Inlet, Cambridge Bay, Igloolik, and Baker Lake with the video transmit terminal located at Frobisher. Inuit Tapirisat established a production centre at Baker Lake and a studio in Frobisher. The ITC worked with the Pond Inlet Community Television Society (PIC-TV) to produce programming for the experiment and to purchase programming from Cambridge Bay and Eskimo Point.

The federal commitment to "Inukshuk" included $1.9 million through the Department of Indian Affairs and Northern Development to cover the costs of training, salaries, leasing and capital expenditures, travel, and general administration. The DOC contribution to ITC and TNI (discussed below) was in the order of $2 million each for satellite time and earth stations. The Department's Communications Research Centre and the Central Region also provided professional and technical expertise and assistance throughout the project's period of operation. The satellite-supported television operations were used to link a number of communities permitting tele-conferences, educational instruction, and general Inuit-language broadcasting.

Taqramiut Nipingat Inc. (TNI) developed a similar experimental project to improve communications in northern Québec communities. The project, "Naalakvik II", which lasted from October 1980 until April 1981, involved five communities: Sugluk, George River, Inukjuaq, Great Whale River and Fort Chimo. Video broadcast transmitters, linked by satellite, were installed in these five communities to enable them to receive programming from TNI's own production centre in Sugluk.

Inuit in remote Arctic communities produce and distribute TV programming via satellite in their own languages to meet their own needs.

A significant outcome of these two pilot projects has been the formation of the Inuit Broadcasting Corporation. In April 1981, the CRTC granted the Corporation a network licence, and the Department of Indian and Northern Affairs provided it with $3.9 million over two years. The Corporation intends to use late night hours on the CBC satellite channel and to originate Inuit programming from one or two northern sites. In the meantime, Telesat facilities at Allan Park are being used to transmit tapes of northern native programming produced by the Inuit personnel who were trained through the ANIK-B projects.

The third major Anik-B satellite experimental program that relates directly to the North involves determining the feasibility of delivering two channels of television programming via one satellite transponder and utilizing small 1.8 metre satellite ground stations. Because of the higher powered Anik-B satellite facilities, the system uses a new generation of low-cost receivers. Therefore this method of delivery is suitable for rural and remote areas. The Department has installed satellite "Television Receive Only" (TVRO) earth stations, in the Yukon at Whitehorse, Johnsons Crossing, Eagle Plains, Watson Lake, Cross River and Stewart Crossing; and in the N.W.T. at Yellowknife, Fort Providence, Inuvik, Fort Simpson, Echo Bay, Norman Wells, Fort Smith and Taltson River. These stations are being lent by DOC. Since September of 1980, it should be noted, three TV signals have been carried by one transponder to meet program commitments to other pilot projects.

On April 14, 1981, the Canadian Radio-television and Telecommunications Commission (CRTC) licensed new services to extend radio and television programming by satellite to under-served and northern areas of Canada. Among the applications approved were a proposal from the Inuit Tapirisat of Canada for the distribution of Inuit programming and one from the Council for Yukon Indians and the Dene Nation for the distribution of Native-produced radio programming. As noted earlier, the CRTC also granted a network licence to the Inuit Broadcasting Corporation, which has begun to broadcast some Inuit programming.

The Council for Yukon Indians has begun some local Native radio broadcasting, and the Dene Nation is working toward this goal.

The CRTC also issued a network licence to Canadian Satellite Communications Inc. (CANCOM) to distribute several television and radio services to under-served and northern parts of Canada. Telesat Canada television uplinks were made available at four locations across Canada and the new CANCOM service began commercial operation in January 1981. CANCOM provides under-served Canadians in rural and northern parts of the country with a varied choice of programming from all regions of Canada in both official languages and Native languages. By the end of March 1981, the CRTC had issued licences for the distribution of the CANCOM service in several communities throughout the territories: Dawson City, Watson Lake, Faro, Whitehorse, Wolf Creek and Carcross Corners, Takhini and McPherson, Yellowknife, Fort Simpson, Cambridge Bay, Aklavik, Hay River, Fort Smith, and Pine Point.

In May of 1981, the Department of Communications announced a program of information and technical advice to help under-served communities wishing to receive the CANCOM service. Department of Communications staff in regional and district offices across Canada and in the North are providing information on licensing, general technical advice and guidelines in completing the required application forms. The Department of Communications also made changes to its earth station policy to facilitate the reception of signals from Canadian satellites especially in northern and other under-served parts of Canada. As a result, the "resource camps" carrying out logging, mining or petroleum exploration activities, became eligible to own and operate earth stations for receiving radio and television programming from Canadian satellites. These camps also became exempted from the requirement under the Radio Act to obtain a licence from the Department of Communications in cases where the CRTC does not require a broadcasting licence.

The CRTC also issued several broadcasting licences for communities in the N.W.T. to provide more access to CBC radio and television programming. On July 22, 1981, after a public hearing, the CRTC announced that it had approved broadcasting licences for Native and English language television stations at Coral Harbour, Arctic Bay, Chesterfield Inlet, Fort Liard and Pelly Bay. With a transmitter power of 10 watts, these stations will be able to broadcast the programs of the CBC English language television network received via satellite, and produce part-time local programming from studios within the communities. At the same time, the CRTC also announced the licensing of English language FM radio stations for each of these communities. Stations at Clyde River and Grise Fjord were also licenced to rebroadcast the programming of the CBC English language AM network.

In December of 1981, the CRTC licensed English language television stations for four communities: Hall Beach, Sanikiluaq, Snowdrift, and Holman Island. They were licenced to broadcast the programs of the CBC television network received from satellite, and to broadcast television programs part-time their own studies. The CRTC also granted these communities licence to operate FM radio stations, and licensed an AM station at Gjoa Haven to rebroadcast the CBC AM network programming.

During the past year, the Department of Communications has worked closely with the CBC Northern Service. Both support more native television training and production.

The Northern Service strives to provide a broadcasting service to meet the special needs of all northerners. Its activities are described in full in the CBC section of this report.

The telephone service of Bell Canada and NorthwesTel continued to improve throughout the North with Telesat installing two "Thin Route" message stations — small earth stations used for carrying telephone traffic — in Cullaton Lake and Arctic Bay. Long distance service was generally upgraded by adding more circuits to the Thin Route service to twenty-five northern communities. During 1981-82, Bell Canada also installed additional long distance circuits at Baker Lake, Broughton Island, Clyde River, Chesterfield Inlet, Coral Harbour, Eskimo Point, Leaf Bay, Pangnirtung, Rankin Inlet, Repulse Bay, Whale Cove, Frobisher, Hall Beach, Resolute, and Nanisivik.

Bell Canada continues its policy of providing Inuit subscribers with facsimiles of their monthly bills in Inuktitut; this practice has now been operating successfully since early 1978. Bell also continues to distribute a trilingual telephone directory (Inuktitut, English, French), complete with maps and illustrations. Where possible, the book uses the special dialect of the communities involved.

Arctic Bay, Lake Harbour, Leaf Bay, Little Cornwallis Island and Repulse Bay received the new DMS-10 S.D.O. — "Small Dial Office" machine — as part of a ten-year effort to replace older, less reliable switching equipment. The "Small Dial Office" machine is a new type of digital switching apparatus designed by Bell Northern Research and manufactured by Northern Telecom.

The S.D.O. has a maximum capacity of 500 lines instead of 6,000 and is therefore less costly and better suited to the special conditions encountered in the far North. The machine will provide a more reliable service and, in addition, will enable maintenance employees to monitor its operation by satellite.

NorthwesTel continues to provide a full range of telecommunications services throughout the Yukon and the western part of the N.W.T. Expansion and extension of NorthwesTel operations and service was undertaken in several areas throughout the North. Specific information on these recent initiatives is outlined under the heading "NorthwesTel Inc./NorouesTel Inc.", included in this report under the CNR section.

In 1981-82, federal government support for improved telecommunications services in the N.W.T. amounted to $595,000 provided under the Northern Communications Assistance Program (NCAP) and under the Minimum Annual Revenue Guarantee Agreement.

The $9 million Northern Communications Assistance Program, as originally announced in January 1977, was reduced to $7.2 million in federal contributions. These contributions cover the capital cost of communications facilities required to bring reliable long distance telephone service to the Northwest Territories. Bell Canada and NorthwesTel, the two telecommunication common carriers in the Territories, are investing a similar amount for local exchange equipment. Satellite ground stations or ground-based circuits are providing the long distance links. The Northern Communications Assistance Program does not affect the Yukon because all Yukon communities already have good quality basic telephone facilities.

During the 1981-82 fiscal year, DOC established the Public Initiatives Program to support non-profit groups wishing to make use of Telidon, the two-way television technology. The object of this Program is to contribute to the creation of data bases appropriate to the needs of special interest groups such as Inuit and Native organizations. Among the organizations to which grants have been allocated are the Council for Yukon Indians and the Inuit Tapirisat. The Council for Yukon Indians plans to install a Telidon system, thus creating an English and Native languages data base designed to improve communications among the Native residents of the Yukon. The Inuit Tapirisat project will involve a feasibility study on the potential for Telidon technology among the Inuit in northern Canada through the establishment of a teletext electronic community newspaper.

### *Plans for 1982-83*

The Department of Communications will remain committed during the 1982-83 year to doing everything within its mandate to promote communication services throughout the North. It will also continue to encouage more northern and native programming.

It is expected that in 1982-83, CRTC will continue to authorize northern communities to distribute the new Canadian satellite-delivered CANCOM television and radio service. The recently announced Canadian pay television services, expected to become operational in the coming months, will be available by satellite to broadcasting facilities for distribution throughout the North.

The shared Summer Job Corps program of the DOC Central Region and Employment and Immigration will be continued again in 1982. Support will also be available to the Adult Vocational Training Centre at Fort Smith N.W.T. for increased training in electronics. The training will enable graduates to meet the Public Service Commission requirements for employment within the Public Service. Graduates will, therefore, be qualified to fill existing or new positions as they become available.

Telesat plans to install an earth station at Eureka so that permanent "Thin Route" message service will become available during the 1982-83 fiscal year. It also expects the television uplink service for the Inuit Broadcasting Corporation will become operational from Frobisher Bay.

The Public Initiatives Programme's projects in the North, involving the Council for Yukon Indians and the Inuit Tapirisat are expected to become operational. The Program will help these groups to explore the potential for special interest applications of Telidon in the North.

It is expected that during the next two to three fiscal years, the Department will fund additional work under the Northern Communications Assistance Program (NCAP) to provide long distance and local telephone service to more communities in the NorthwesTel service area.

Bell Canada will continue to expand its satellite circuit program at the following existing N.W.T. earth station locations: Cape Dorset, Clyde River, Eskimo Point, Little Cornwallis Island Pangnirtung and Rankin Inlet. The new DMS-10 SDO is scheduled to be installed at Grise Fjord, Whale Cover, and Chesterfield Inlet during 1982-83 to replace the old step-by-step switching machines. NorthwesTel plans to continue and improve its facilities during 1982-83.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 1 419 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 686 | 48.3 |
| Social and Cultural Development | 395 | 27.8 |
| Economic Growth | 333 | 23.5 |
| Evolution of Government | 5 | 0.4 |

# Crown Assets Disposal Corporation

**Responsibilities**
Crown Assets Disposal Corporation is an agency of the federal government. Its mandate is to act as an agent of the Crown in the sale of the surplus assets of federal government departments and agencies. Many of these assets are sold from locations in the North. Under a long-standing agreement, sales of United States Government surplus property located at DEW Line sites and other northern establishments are also carried out. In addition, by agreement, the Corporation acts as the agent of the Government of the Northwest Territories in the sale of surplus assets.

***Review of 1981-82***
In 1981-82, the Corporation's sales of surplus assets increased. For environmental reasons, a quantity of United States heavy equipment was taken from DEW Line Sites to Montreal, where it was sold during the Fall of 1981.

In June 1981, the Corporation opened a regional sales office in Winnipeg, Manitoba. The office is responsible for that area of the Arctic located East of 90° West longitude.

***Plans for 1982-83***
The Corporation will continue to publicly advertise surplus equipment available in the North and will assist Canadian or U.S. establishments with any special disposal problems they may have.

# Eldorado Nuclear Limited

Eldorado Nuclear Limited is a Federal Crown Corporation. It is engaged in the exploration, mining and refining of uranium for use in generating electricity. In 1981-82, the Corporation participated in two field investigations in the Keewatin district of the Northwest Territories and two in the Yukon Territory.

Eldorado Nuclear expects to continue its exploration activities at about the same level in the 1982-83 fiscal year.

# Department of Employment and Immigration

***Responsibilities***

The Department works with employers and employees to help meet their respective needs for staff and jobs. It uses many different programs and services, including the Canada Employment Centres professional counselling, recruitment services, training, relocation assistance, non-immigrant workers' control, industrial adjustment assistance and the Unemployment Insurance Program.

Operational responsibilities for the Commission in the Yukon Territory come under the Director, Yukon.

Consultation in policy development on employment and immigration matters occurs between the federal and Territorial Governments. The Manpower Needs Committee in the Yukon, with representation from several departments of the Territorial and Federal Governments, meets frequently each year.

**Northwest Territories**

***Review 1981-1982***

Employment and Immigration Canada provides services to the Northwest Territories through Canada Employment Centres (CECs) located in Yellowknife, Inuvik, Hay River and Frobisher Bay. Full-time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. An Employment Development Branch located in Yellowknife also administers a variety of programs in the N.W.T.

A full range of services relating to unemployment insurance programs is available from both Frobisher Bay and Yellowknife. From April 1, 1981 to February 28, 1982, a total of 3,384 claims were received from N.W.T. residents.

The Yellowknife Canada Employment Centre with a staff of 32, along with its branch offices, serves about 30 settlements with a population of more than 24,000. This CEC is responsible for providing services to about two-thirds of the N.W.T. Services are largely directed towards the government offices in the capital city and the major mines, including two large gold mines in Yellowknife.

The CEC in Hay River with a staff of five, is responsible for a labour market area of approximately 48,000 km with a population of approximately 6,500. During the past year, the CEC has concentrated on employers' staff needs in four major communities with emphasis on providing service to the transportation and mining industries.

The CEC in Inuvik has a staff of seven. It is responsible for an area of approximately one-sixth of the N.W.T. and serves about 12 settlements with a combined population of approximately 7 300.

The CEC at Frobisher Bay, with a staff of six, is responsible for two-fifths of the area of the N.W.T. It serves approximately 24 settlements with a combined population of more than 8 000. The staff is concerned with employment in the Baffin Region and with the employment needs associated with the development of a new lead-zinc mine at Strathcona Sound.

From April 1 to February 28, 1982, the N.W.T. CECs recorded 4 739 new registrations. In addition, 4 667 registrations were revived. In an effort to find work for these registrants, the CECs referred 9 329 applicants to 4 935 vacancies. More than 3 380 people were placed.

During 1981-82 the Employment Development Branch spent approximately $2.52 million through a variety of programs to create 555 jobs. Under the Canada Community Development/Services Projects programs, a total of $663 000 was spent to create 170 jobs. These ranged from logging and community repair work to health care, teaching and training positions.

Approximately $1.5 million was spent under the Local Employment Assistance Program to provide funding for 27 projects. These created 162 jobs in areas such as logging, sewing, baking and restaurants.

Under the Summer Canada Program, $326 000 was spent among 38 projects to provide work for 220 people.

Under the New Technology Program, one project was funded at a cost of $32 000. This resulted in the creation of three jobs in research and analysis.

The Canada Manpower Training Program is administered under an agreement between the Department and the Government of the N.W.T. The latest agreement, signed May 2, 1978, was due to expire on March 31, 1981. However, it was extended pending changes in legislation. The agreement, which encourages the development of training programs within industry, underscores the fact that training programs can be effective when consultation and co-operation exist between the Governments of Canada and the N.W.T.

During the fiscal year, the Department purchased approximately 47 800 training days from the N.W.T. Department of Education. These training days were used to develop the skills of approximately 900 trainees, 400 apprentices and to provide academic upgrading to approximately 100 persons.

In addition, 431 contracts were signed under the Canada Manpower Industrial Training Program, providing instruction for an estimated 800 trainees.

Under the Canada Manpower Mobility Program, 20 workers received assistance in looking for employment outside the areas they lived in. Thirteen of these persons were relocated to employment and two were given special travel assistance.

Total expenditure for this activity was approximately $12 000. In addition, exploratory assistance for 10 persons and relocation assistance for 16 persons was authorized for people looking for or accepting work in the Northwest Territories. All figures relating to mobility are minimum estimates.

During 1981-82, Outreach Programs operated in Baker Lake, Fort Good Hope, Eskimo Point, Fort Resolution, Igloolik, Wrigley, Pond Inlet, Pangnirtung, Fort Providence, Cambridge Bay, Tuktoyaktuk, Rae-Edzo, and Yellowknife. A total of 13 Outreach workers were located in the N.W.T.

### *Plans for 1982-83*

Early in 1982, a new sub-office will be opened in Norman Wells. It will work to find employment for as many northerners as possible, with special emphasis on Natives. This new sub-office will also be responsible for maintaining closer liaison with employers in the area in order to better meet their needs. The sub-office will be involved in employment matters relating to two major projects: ESSO Resources Norman Wells project and the pipeline to Zama City in Northern Alberta.

Several boundary changes in the N.W.T. will take place that will affect areas served by the Canada Employment Centres. Frobisher Bay will add three settlements, which will increase the population that its Centre serves by about 200 people. The CEC in Inuvik will have its area decreased, reducing the population served by about 1 000 persons. People in these settlements will be attached to the Yellowknife CEC. All changes to the geographic areas served by the Centres took place effective April 1, 1982. Efforts will continue to maintain good working relationships with the N.W.T. Government and other federal departments to assure a co-ordinated approach to activities. An aggressive marketing plan, implemented in the first months of 1982, will continue throughout 1982-83 to promote Manpower Planning.

## Yukon Territory

### *Review 1981-82*

The Department focused on maintaining and improving services to all areas of the Yukon. Outreach workers continued to provide employment services to their local labour forces, in addition to those services provided by Whitehorse-based staff.

Through personal visits to employers, and through liaison with employer organizations and communities and publicity programs, employers were encouraged to use the services of the Commission, improve the skills of their employees through training, and develop methods to make maximum use of Yukon labour.

The Canada Employment Centre for Students operated from Feburary to August, 1981. The graduate student manager contacted all post-secondary Yukon students about their summer employment needs and identified suitable employment opportunities. In addition, two undergraduates helped Yukon secondary school students to apply for and find jobs. This was accomplished through visiting potential Yukon employers, and secondary schools, providing short courses on job search techniques and launching a public relations program. During the 1981 program, 1 038 students registered for employment and 572 were placed.

A Native employment counsellor worked with the Natives in the labour force to match their needs with specific programs.

Canada Manpower Training Program activities continued throughout the year in virtually all courses offered by the Yukon Territorial Government through the Yukon Vocational and Technical Training Centre, both in Whitehorse and outlying communities. During 1981-82, approximately 35 000 training days were purchased under the Adult Occupational Training Act Agreement. Training days included basic training for full-time and part-time skill development. In addition, 13 trainees were referred to southern training institutions, primarily in British Columbia.

The Canada Manpower Industrial Training Program provided financial incentives to employers who hired and trained unemployed workers and those with special needs, and who upgraded the skills of those already employed. A total of 143 contracts with employers covering 463 trainees were involved in this program. In addition, two major Critical Trades Skill Training contracts were negotiated with two major mining companies. These contracts involved selecting and hiring 29 additional apprentices in 3 trade areas — Heavy Duty Mechanic, Industrial Electrician and Millwright. These contracts are for a period of two years and it is expected that further contracts for more apprentices will follow each year.

The Canada Manpower Mobility Program helps workers explore the job market and relocate away from their places of residence. The Program helps workers to accept temporary jobs in other areas, to travel to Canada Employment Centres for services not available in their home areas and to travel to training courses. During the year, two temporary employment grants, one exploratory grant and eight relocation grants were authorized in Yukon.

Employment and Insurance operations included 10 340 registrations for employment, 5 110 referrals to employment opportunities and 1 821 placements. In addition, 406 visits were made to employers. Insurance operations processed 3 449 claims for unemployment insurance benefits.

The four community-based Outreach Projects at Watson Lake, Haines Junction, Dawson City and Mayo functioned successfully during the year by extending CEC services into their respective communities.

The Yukon allocation for Summer Canada '82 is $458 000, with developmental work and review largely completed by March 31, 1982. Summer Canada '82, as in 1981-82, largely replaces all previous internal and external Youth Employment Programs offered by the Government of Canada.

The Local Employment Assistance Program (LEAP), which provides funds to develop long-term jobs and employment opportunities, approved projects totalling $698 330 during the year. Because these projects are long-term, carry-over into 1981-82 is included and many will require additional funding in future fiscal years.

Three new Employment Development Programs were implemented during the year, two of which replaced Canada Works. Details of their objectives and utilization are as follows:

The Canada Community Development Program is designed to help local organizations in developing and managing activities that will create short-term jobs. These jobs are related to community-based projects. They are intended to help maintain or expand the number of existing jobs in areas of high unemployment. A total of 17 projects were approved which, with a federal financial commitment of $386 000, created 94 jobs.

The Canada Community Service Program is designed to create jobs in the field of community services, particularly in activities dealing with the serious problems faced by women, native people and immigrants. This long-term employment initiative has the potential to fund projects over a three-year period on a diminishing scale. Nine projects were approved creating 49 jobs with a federal financial commitment of $249 000.

The New Technology Employment Program is designed to provide jobs for post-secondary graduates in technical and scientific fields who have been unable to find work related to their field of study. Two projects were approved with a federal financial commitment of $13 949.

The Program for Employment-disadvantaged is directed to those who have not been able to find continuous work for a significant period of time because of physical or mental disabilities or other employment barriers. The Program is intended to help such people find work who would not be able to do so without the assistance of the Program. Nine jobs have been created under this Program with a financial commitment of $64 000.

Considerable time and effort continued to be directed toward Manpower Planning for the proposed Alaska Highway Gas Piepline and the Beaufort Sea Hydrocarbon Development. In addition, membership on the management committee and the various sub-committees of the two Sub-agreements to the General Development Agreement required much time. Other planning and development activities relating to existing and proposed economic projects continued.

### *Plans for 1981-82*

The Department will emphasize improving services to all areas of the Yukon by continuing to co-ordinate and integrate one-stop service; expanding services through existing programs; developing and supporting services through small community-based Outreach projects; making employers aware of the services available to recruit, retain and upgrade their work forces; maintaining CEIC services to native people; co-ordinating implementation of new economic initiatives; and planning for employment and training demands from projects in Yukon.

| **Summary of Direct Northern Expenditures (000's)** | $ | % |
|---|---|---|
| *Total Forecast 1981/82* | 25 443 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 16 881 | 66.3 |
| Economic Growth | 7 096 | 27.9 |
| Administration and Support | 1 342 | 5.3 |
| Social and Cultural Development | 110 | 0.4 |
| Sovereignty and Security | 14 | 0.1 |

# Department of Energy Mines & Resources

## Geological Survey of Canada

***Responsibilities***

The Geological Survey of Canada gathers and disseminates comprehensive information about the geological framework of the country. Its activities include determining the mineral and energy resources potential within Canada, carrying out studies on the potential use of land, and conserving the natural environment.

Primarily it obtains information about the geological framework of Canada, its properties, and evolution. Information on bedrock geology is obtained through surveys, regional studies and national compilations. This information is used for identifying resources and appraising non-renewable resources potential. Similar studies obtain information about the nature and evolution of the Canadian landscape, its surficial materials, terrain properties, process, hazards and capabilities. This information is essential when evaluating energy and mineral resource development.

The Geological Survey is also concerned with identifying resources and estimating their extent. Estimates of the amount and quality of certain energy resources are made each year. Estimates for mineral commodities, because of the complex calculations involved, are made less frequently.

***Review 1981-82***

Preliminary results of the 1981 field season were released in Current Research, Part C (November 1981) and Current Research, Part A (January 1982). The former contained 4 items on the north, the latter 32.

Field work in the Yukon and adjacent District of Mackenzie focused on the application of new geological models to areas of possible mineral potential. The Road River "group" (the host rock for several lead-zinc deposits) was traced westward of the Nahanni map-area to the outer part of the Selwyn Basin. In the same area a study was begun on the relation between tungsten-bearing granite plutons and barren plutons. A regional cross section of the central Mackenzie Mountains was developed that suggests crustal shortening of about 90 km. This concept is of interest because it identifies a large untested area with potential for trapped hydrocarbons.

Field work in northern Ellesmere Island in co-operation with Petro-Canada, resulted in clarification of complex late Ordovician and Silurian facies relationships. In central and southern Ellesmere the Devonian to Tertiary structural history of the Arctic Platform rocks was clarified during extensive field work. Field work and subsurface data were used to prepare an account of the geological history of the Sverdrup Basin from Upper Triassic to Lower Jurassic in terms of stratigraphy, paleogeography and hydrocarbon occurrences.

The plate tectonic model of the Bear-Slave Province (precambrian in territory of Mackenzie) was refined with a better understanding of the initial rifting and early stages of the first collision along the old continential margin. A detailed study was made of the Back River Caldron subsidence complex to investigate the roots of Archean volcanoes. Work along the Thelon Front, the eastern boundary of the Slave Province with the Churchill Province, showed that this boundary is offset by the major transcurrent Bathurst Fault System. In the central district of Keewatin, north of Baker Lake, geological mapping delineated northeast trending supracrustal belts (possibly Archean) and high-grade gneiss complexes. A new tectonic interpretation of the 1200 million year old rocks in Borden Basin in northern Baffin Island indicates that these rocks were deposited in a Proto-Arctic Ocean during rifting of the Canadian-Greenland shield.

Surficial geology field work was directed toward developing a terrain inventory and on understanding of Quaternary processes in order to address environmental and engineering concerns. New field work in Yukon resulted in observation of variations in till composition and provenance that will assist in drift prospecting studies. In the Prince Albert Sound area of Victoria Island, massive ground ice bodies were delineated that would profoundly affect pipeline or other engineering construction. Field and laboratory work has indicated a correlation between tree rings and flood events in the Mackenzie Valley that may assist in forecasting future occurrences. Experimental field research on the occurrence and growth of permafrost was continued at the artificially drained lake (Illisarvik) near Tuktoyaktuk. Field work in central Keewatin has provided data to recognize areas that are susceptible to severe terrain damage by tracked vehicles. These data will result in minimizing or eliminating such damage.

Preliminary analysis of the geophysical data from the FRAM III field operation in the Arctic Ocean, suggests that the Yermak Plateau is in part continental crust and in part oceanic crust. Seismic reflection profiles revealed four ridge structures in Baffin Bay, offshore from Cumberland Sound. The PISCES IV research submersible was used in an examination of the probable source of the Scott Inlet oil seep on the Baffin Island Shelf. Future development in the Arctic will require a more complete inventory of the coastal zones, and a better understanding of coastal processes, in consideration of transportation routes and engineering works. Mapping of the coasts of NE Baffin Island and Bylot Island was completed and further study of the coastal processes undertaken. An atlas of oblique low-level aerial photos of northwest Devon and northeast and northeast Baffin Islands and coastal geology maps for northwest Bathurst Island was prepared under contract. Further information on the distribution of shallow permafrost, sediment dynamics, ice scour, and seabed stability in Beaufort Sea was obtained during joint studies with A.P.O.A., and by reinterpretation of a large volume of existing seismic data.

In the past year, regional mineral resource appraisals were completed of proposed national park areas in northern Yukon and Ellesmere Island for Parks Canada, and a comprehensive appraisal of the mineral and non-renewable energy resources of the entire Yukon was completed for the Department of Indian and Northern Affairs.

Aeromagnetic surveys over Kane Basin and northern Baffin Bay were flown using the National Aeronautics Establishment Convair and the results have been compiled. The first Magnetic Anomaly Map of Arctic Canada was completed and published.

### *Plans for 1982-83*

Of the 434 projects to be carried out by the Geological Survey of Canada in 1982-83, 133 will involve work in areas north of 60°, and 56 of these will have a field component. Projects without a field component will involve laboratory investigations, evaluation of field data and the preparation of maps and reports.

Field work in the northern Cordillera in Yukon and District of Mackenzie will include: stratigraphic and structural studies in the Nahanni, Sheldon Lake, and Tay River map-areas and detailed mapping of some of the granitic plutons; mapping in the north half of the Dawson map-area with emphasis on the Proterozoic stratigraphy; Proterozoic to Cretaceous stratigraphic investigations in the Mackenzie Mountains; and biostratigraphic and paleontologic studies complementary to the other field projects.

The principal activity of the Precambrian Geology Division in the Northwest Territories will be 1:250 000 geological mapping and associated research in Mackenzie and Keewatin. Three field parties in the area between Great Slave and Great Bear Lakes will provide additional information on the early geological history and the relation of the Wopmay Orogen to plate tectonism. Northwest of Baker Lake mapping will begin in the Aberdeen Lake and Deep Rose Lake map-areas.

The larger field projects in the Arctic Islands will involve reconnaissance mapping of the Paleozoic rocks of northernmost Ellesmere Island and Mesozoic surface and subsurface studies in the Sverdrup Basin.

Terrain mapping and inventory work will begin on Prince of Wales and King William Islands and continue in western Victoria Island and the Nahanni and Sheldon Lake areas of Yukon. Field work in eastern Ellesmere Island will involve paleontological and stratigraphic studies directed toward the glacial history of the eastern Arctic Islands. The surficial geology of the Mackenzie Valley corridor will be examined in the vicinity of Norman Wells and Canot Lake. The study of processes affecting the surficial deposits of the Arctic will include flood hazards along the Mackenzie Highway, permafrost development beneath a drained lake (Illisarvik) in the Mackenzie delta, and slope processes and frost heave on the Parry Islands.

A cruise to the Baffin Shelf will investigate the bedrock geology and sample it by drilling in selected critical areas. An examination will begin of geological conditions of Arctic fiords on Baffin Island that is part of a larger project to establish base line information on these critical environments before proposed Arctic development is started. The reconnaissance of Arctic coasts and coastal processes will proceed with topical studies being continued when possible. Surveys in the Beaufort Sea will assist in the determination of permafrost delineation, soil properties zonation and the origin of pingos in relation to offshore hydrocarbon exploration and development.

The evaluation of Canada's hydrocarbon energy resources is an ongoing procedure and this year will result in reassessment and redefinition for Mesozoic plays in Sverdrup Basin and offshore Beaufort Sea area, and new assessments of the oil and gas resources of the Arctic Islands and the Beaufort-Mackenzie region.

Regional metallogenetic studies, that both provide basic models needed for mineral evaluation studies and assist in planning exploration strategies will be continued in northern Cordillera and southwestern and northwestern Precambrian Shield.

Ocean aeromagnetic studies to be completed in Kane Basin and Nares Strait should provide valuable data needed to develop a model of the early geology history of the area, in particular the relative movement of Greenland and Ellesmere Island. Resource geochemistry studies in the Nahanni map area will be completed, and a radon-helium survey test will be carried out near Baker Lake.

Preparations for the next multidisciplinary study in the Arctic, (CESAR) will include development of new instruments and modification of existing instruments required for geological and geophysical surveys.

## Gravity & Geodymanics Division

### *Responsibilities*

The Gravity and Geodynamics Division is responsible for completing the regional gravity survey of the Canadian landmass and offshore regions. In the far North, the Division carries out this work in co-operation with the EMR Polar Continental Shelf Project. Precise observations of gravitational forces provide basic data for the mineral and exploration industries and for studies of sedimentary basins and the earth's crust and upper mantle. These observations also provide data for geodetic studies and meet the needs of the Department of National Defence for this kind of data.

The Division is also responsible for establishing gravity standards throughout Canada by maintaining a first-order network of gravity stations. These serve as reference and control points for all regional and detailed gravity surveys. The Division also maintains a bank of all gravity data that meet national standards.

### *Review of 1981-82*

In conjunction with the Canadian Hydrographic Service, the Division completed a gravity survey of the southerly approach to Prince of Wales Strait.

In the first year of a two-year contract survey, about 280 gravity observations were made in the East Arm of Great Slave Lake, at an average station-spacing of 4-6 kilometres.

Under contract, the Division made about 665 gravity observations at 3 km intervals along two traverses at precise level benchmarks in the Yukon and British Columbia. This activity supported a program of the Geodetic Survey, Surveys and Mapping Branch. The first traverse began at Whitehorse, Yukon and proceeded north to Dawson City; the second began at Carmacks, Yukon, and proceeded east and south via Ross River, Watson Lake and Dease Lake, to Hazelton, British Columbia.

Analysis of multi-parameter geophysical and marine geological data collected during the EMR-sponsored Lomonosov Ridge Experiment (LOREX) in 1979 confirms the widely held belief that this Arctic submarine ridge was formerly part of Eurasia. It appears that initial separation was achieved by left-lateral shearing. What is now the Alpha submarine ridge, may have been part of the original Lomonosov block.

A report on the fragmentation of the Canadian Arctic Archipelago — Greenland region during the last 60 000 years is now being printed.

### *Plans for 1982-83*

A regional gravity survey of the polar shelf north of Ellesmere Island is scheduled for March 1983, in co-operation with the Canadian Hydrographic Service.

A proposal to study the crustal nature of the Alpha Ridge has been prepared and is now under review. If approved, this EMR-sponsored sequel to LOREX will begin during the spring of 1983.

The second and final phase of the gravity survey of the East Arm of Great Slave Lake will be completed by contract.

The Division will be making some detailed gravity traverses across selected geological structures of the Wopmay Orogen in the District of Mackenzie, N.W.T.

Interpretation studies planned for 1982-83 include: compiling available geophysical and geological information along an Arctic margin transect from the Arctic craton to the Canada Basin of the Arctic Ocean. (This project forms part of a U.S. Geodynamics Committee Joint Canada-U.S. Continent-Oceans Transects Program.)The Division will also study polar margin evolution, sedimentary loading along an axial profile of the Sverdrup Basin and the magnetic anomaly associated with the Haughton structure, Devon Island. It will also review polar evolution and tectonics.

## Canada Oil and Gas Lands Administration (COGLA)

The Canada Oil and Gas Lands Administration exercises broad statutory authority and regulatory control over the exploration and development of mineral resources in Hudson Bay and Hudson Strait and all other Canada Lands.

The disposition of oil and gas rights in Canada is governed by the Canada Oil and Gas Act and its regulations, and the Canada Oil and Gas Land Regulations, promulgated under the Public Lands Grants Acts and the Territorial Lands Act. The Canada Oil and Gas Act, and the Oil and Gas Production and Conservation Act provide the authority for supervising and controlling oil and gas activities. The two Acts are intended to ensure safety, protect the environment, conserve resources, promote the use of Canadian goods and services and to establish affirmative action programs.

The administration and disposition of minerals other than oil and gas are governed by the Canada Mining Regulations, promulgated under the Public Lands Grants Act and the Territorial Lands Act.

### *Review 1981-1982*

During 1981, COGLA negotiated an exploration agreement, involving about 29 million hectares covering most of central Hudson Bay. The agreement involved a group of three oil companies: Canadian Occidental Petroleum Ltd. (the operator), Sogepet Ltd. and the Ontario Energy Corporation. Sogepet has subsequently assigned part of its 1/3 interest to SOQUIP, the Quebec provincial company. The agreement specifies a five-year work program consisting of seismic surveying, environmental studies and the drilling of one or more wells. The operator plans to conduct a 5 000 km seismic program in the summer of 1982 and has submitted an application for approval to carry out this work. The interpretation of this program and other available geophysical data may lead to petroleum prospects, which may warrant further exploration and possibly drilling.

In addition to working under the exploration agreement, the Companies currently hold several other permits and leases. There are 62 exploratory permits covering about 1.4 million hectares, located in the northern Hudson Bay area near Mansel and the Southampton Islands. Exploration has been suspended in this area since 1971 at the request of the native inhabitants. In the central Hudson Bay, Mobil Oil Canada, Ltd. holds 22 leases covering about 6.5 million hectares.

There has been no oil and gas exploratory activity in Hudson Bay since 1976. In 1974, the wells Aquitaine et al Narwhal South 0-58 and Aquitaine et al Polar Bear C-11 were drilled and abandoned, and the Aquitaine et al Hudson Walrus A-71 was re-entered and abandoned. Polar Bear C-11 and Hudson Walrus A-71 had minor gas shows. During the period 1965— 1976, the petroleum industry spent $22 million for drilling and $19 million for geophysical exploration. The last seismic program was completed in 1975, and in 1976, a final aeromagnetometer survey was carried out.

## Canada Centre for Remote Sensing

### *Responsibilities*

The Canada Centre for Remote Sensing (CCRS) develops and co-ordinates a national program to produce remotely sensed data and derive information for the management of Canadian natural resources. In recent years this activity has included a concentrated effort in support of northern resources exploration and extraction.

***Review 1981-82***
CCRS is continuing the development of remote sensing information systems to support petroleum exploration and delivery from Arctic waters. Present activity has included the use of aircraft-based microwave sensors to support exploration activities in the Beaufort Sea. This same facility is also presently being utilized to determine mission profile requirements for a planned Canadian microwave satellite, RADARSAT, which is planned to be the primary information source to support oil and liquefied natural gas extraction and transportation from the Arctic.

The CCRS Convair-580 aircraft, equipped with a synthetic aperture radar (SAR) and microwave scatterometer, has been used extensively during 1981-82 to gather information on ice type, ice movements, ice ridging, and ice pack formation. During the fall of 1981 these activities were concentrated on providing operational support to DOME Petroleum exploration and drilling operations in the Beaufort Sea. This work, which employed a data downlink to transmit SAR imagery to ships involved in drilling operations, provided real time support to the commercial activity. The potential of extended drilling seasons through the availability of this type of aircraft support has not only benefited the exploration activity, but has been also developed interest in remote sensing service organizations in acquiring similar aircraft facilities to meet the growing operational support demand. During this same time and as well during the Spring of 1982 additional missions were flown to collect ice information to support RADARSAT mission requirements studies. These activities were not only directed at determining the technical specifications of the sensors to be carried on the proposed satellite, but were also aimed at determining optimum satellite orbit parameters as well as frequency of coverage requirements.

The Canadian RADARSAT Program, which is presently in the Phase A Study stage, will provide, starting in 1990, complete coverage of the proposed Arctic transportation routes on a regular basis. The commitment to the use of microwave sensors on this satellite will ensure all-weather all-year coverage of the Arctic regions since microwave sensors do not require sunlight for operation and can penetrate cloud coverage.

## Mineral Policy Sector

***Responsibilities***
The Mineral Policy Sector assists in the development of federal policies on mineral resources. It is concerned mainly with non-energy mineral resources and the contribution they make to the economy.

***Review 1981-82***
During the year, the Mineral Policy Sector's northern activities involved special study groups that included representatives of the Federal and Territorial governments and industry. Activities also included a conference (the Federal-Provincial Mines Ministers Conference, January 18, 1982) and work on interdepartmental committees. These included:
Northern Mineral Advisory Committee;
MacMillan Pass Task Force;
Interdepartmental Committee on Northern Mineral and Energy Resources Assessment; and
Deputy Ministers' Committee on Native Land Claims.

Special Studies or projects initiated by the Sector, or to which the sector contributed, included:

MRI 81/1 Industry-Government Relations, Mineral Issues and Policy Framework — A Background Paper

MRI 81/4 Mineral Policy Alternatives—A Background Essay

MRI 81/5 Mining Legislation and Administration in Canada

MRI 81/6 The Non-fuel Mineral Industry to 1991: A Quantitative Outlook

MRI 81/8 Wages in the Mining Industry

MRI 81/12 Resource Assessment of Northern Lands — Federal Government Activities

Also available in the MRI series, to be published in 1982 is a study entitled "Alternative Technologies for Metal Processing — Implications for the Yukon."

The ongoing monitoring of the reserves and production of Canada's non-ferrous metal mines resulted in the publication of two documents: MR 191 Canadian Reserves as of January 1, 1981: Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold; and, MR 192 Canadian Mines: Perspective for 1981: Reserves, Supply Capability, Development, Exploration.

The Mineral Policy Sector chairs the Federal-Provincial Mineral Statistical Committee, which includes participation by the Territorial Governments. In co-operation with Statistics Canada, the Mineral Policy Sector compiles and publishes annual mineral statistics, including northern mines. The Sector also published a monthly statistical report entitled Production of Canada's Leading Minerals.

Some entries in the National Mineral Inventory card file on northern mineral occurrences and deposits were updated. New cards were added, and some cards were consolidated. There were 2 394 cards in the file on the Northwest Territories and Yukon as of March 31, 1982. A computer index file system called MINSYS is now operational.

MRI 80/7, Canadian Mineral Deposits Not Being Mined in 1980, has been updated. Of the 1 453 deposits for all of Canada, 169, or 11 per cent, are from the Yukon and the Northwest Territories.

***Plans for 1982-83***
The Sector will continue to gather data on northern mineral development. Advisory assistance will be given on issues such as northern mineral policy, comprehensive native claims, and the withdrawal of northern lands for parks. Finally, the Sector will monitor the policies that the Territorial Governments and Indian Affairs and Northern Development are formulating, and which affect the non-energy minerals industry.

**Canada Centre for Mineral & Energy Technology — CANMET**

CANMET's research and development on steels for use in Arctic pipelines continues to be divided into three main areas: pipeline fabrication methods, pipeline degradation and inspection, and pipeline steel development and evaluation.

In pipeline fabrication, a preliminary investigation of weld consumables for normalized and stress-relieved pipeline fittings is being carried out. Contractual work to define parameters involved in hydrogen-induced weld cracking during field welding has been completed.

The Centre has been studying how mechanical and environmental factors can degrade pipelines. Studies of dented pipe will be completed this year. Environmental damage studies have involved examining the phenomena of sulphide stress cracking, stepwise cracking, and stress corrosion cracking of commercial pipeline steels.

The evaluation of current commercial pipeline steels has been completed. These studies included extensive measurement of their mechanical properties, residual stress, microstructures and their "weldability", both in the mill and in the field.

Work is continuing on a project to evaluate the toughness of bronze alloys from which ship propellers are cast. Evaluation of the fracture properties of ship plate for Arctic use is also continuing. The corrosion resistance of a variety of commercial alloys immersed in the waters of Barrow Strait is being studied along with the corrosion of welds in ice-breaking ships.

***Plans for 1982-83***

In 1982-83, CANMET will extend its work on mechanical damage to pipelines to include the effects of gouges. Theoretical analysis will be used to develop a fracture control plan. Pipeline metallurgy will be advanced by examining possible methods that can be used to produce stronger steels. The possibility of measuring stresses in pipelines by magnetometer will be investigated.

In 1982-83, the Centre will continue its work on evaluating the toughness of bronze alloys for ship propellers and will carry out further corrosion studies as described above.

**Surveys and Mapping Branch**

***Responsibilities***

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass by producing and distributing maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The Branch also ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Canada Lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the Branch. It also provides scientific and technical services to other federal and provincial government departments and agencies.

The Branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Directorate.

The Branch Director-General is Chairman of the Interdepartmental Committee on Air Surveys and the Co-ordinating Committee on Offshore Surveys. The Branch also provides the secretariats for the Canadian Council on Surveying and Mapping and for the Canadian Permanent Committee on Geographical Names.

*Geodetic Survey Division*

***Responsibilities***

The Geodetic Survey maintains and extends a national survey reference system of selected stations, whose latitudes, longitudes and elevations have been accurately determined. This geodetic reference system is part of the larger North American continental system. It ensures the availability of geodetic information relating to the Canadian land-mass. This kind of information is essential for geoscience and environmental studies, engineering and natural resource development, national mapping and national security.

***Review of 1981-82***

Major network strengthening and densification were undertaken in the Arctic using the Satellite Doppler method. Ninety stations were established, mainly on Prince of Wales, Bathurst, Graham and Devon Islands. Additional stations were also established in the vicinity of Yellowknife and Great Bear Lake.

In the southern Yukon, altimeter traversing was completed for mapping of forty-eight 1/50 000 map sheets. Additional altimeter traversing was completed on Devon Island and in the vicinity of Hay River.

Survey mapping control by second-order traversing was also provided on Devon Island. In the Yellowknife-Hay River area, The Inertial Survey System (I.S.S.) was also used for mapping control.

***Plans for 1982-83***

Systematic densification of the primary horizontal control survey net by the addition of Satellite Doppler stations is planned in the southern Yukon, extending into the Northwest Territories to Great Slave Lake. Mapping control is scheduled in several locations in the Arctic—specifically in the group of islands stretching from Prince Patrick Island to Ellesmere Island, the western shore of Hudson Bay south of Rankin Inlet, the southern part of the N.W.T. to the east of Great Slave Lake, and in an area stretching northwards from Fort Simpson and Fort Providence toward Great Bear Lake. Various survey methods will be used in these areas. Reconnaissance and preparatory work are planned for two local precise control networks that will be used to monitor the stability of proposed Very Long Baseline Interferometry (VLBI) sites, one at Yellowknife and another at Whitehorse.

One or two geodetic horizontal control stations will be established, mainly by Satellite Doppler Methods, in each of the following settlements: N.W.T. — Snowdrift, Fort Resolution, Lac la Martre and Fort Liard; Yukon — Haines Junction, Teslin, Tagish and Carmacks. These stations will provide a geodetic positional datum reference for local surveys in these settlements and, in some cases, will also facilitate the positioning of air navigation aids.

### *Legal Surveys Division*

**Responsibilities**
The Division carries out surveys for land or resources transactions connected with the administration and development of public or other lands. It ensures the accuracy of the property surveys, land descriptions and plans made under the Canada Lands Surveys Act and other Acts and regulations. The Division fulfills the federal obligations to define, survey and maintain provincial and territorial boundaries in Canada. Through its regional offices in Whitehorse and Yellowknife, the Division provides survey-related advice and assistance to local government officials and the public, as required.

**Review 1981-82**

*Yukon Territory*
The Division carried out Legal Surveys under contract on various Indian lands at Teslin Post, Whitehorse, Upper Liard and Beaver Creek. A survey of Upper Bonanza National Historic site in Dawson was carried out for Parks Canada. Four lots were surveyed in Conrad for the Department of Indian and Northern Affairs. The division also surveyed 40km of boundary of Kluane National Park and re-surveyed the Kaku Indian Reserve in Northern B.C. Both surveys were carried out under contract. Under the Placer Mining Act six resurveys of parts of baselines in the vicinity of Dawson were completed. Staff from the Regional Office and Geodetic Surveys, re-surveyed the Yukon-Northwest Territories boundary in the area of Macmillan Pass.

Two inspection surveys near Whitehorse and one north of Elsa were carried out on mining claims. Examinations were completed on 65 plans under the Canada Lands Surveys Act, and 29 under the Land Titles Act. The Division issued 48 sets of instructions.

*Northwest Territories*
Contracts for surveys of 42 summer residential lots and one for a survey at Hay River were issued. In addition, 63 sets of instructions were issued. Staff were involved in control surveys and targeting for the Northwest Territories Government community development projects in Cambridge Bay, Pelley Bay, Gjoa Haven, Fort Resolution and Norman Wells. Regional staff also completed a topographical survey in Grise Fiord to enable the N.W.T. Government to carry out land use planning.

During the year, 70 plans under the Canada Lands Surveys Act, and 27 under the Land Titles Act were examined. Inspections at Norman Wells and on two Co-ordinated Survey Areas (C.S.A.) at Hay River and Yellowknife were completed. Targets were painted on selected co-ordinated survey-control monuments in the Yellowknife C.S.A. for the Government of the Northwest Territories. Maps sales were taken over from the Department of Indian and Northern Affairs (DINA) and a map sales outlet was opened in the Regional office.

**Plans for 1982-83**

*Yukon Territory*
The Division's activities will include surveying work in Indian communities, isolated posts and carrying out some Placer Mining baseline surveys. Monuments will be placed for Doppler control for future large-scale mapping in smaller Yukon Territory communities. The Division may carry out more surveying on the boundary of Kluane National Park. To ensure the continuing high quality of surveys, five inspections will be carried out and maintenance work will be done on the Whitehorse Co-ordinated Survey Area.

*Northwest Territories*
Approximately 25 summer residential lots will be surveyed in the district of Mackenzie for DINA. The Division will carry out targeting for photomapping at 1:10 000 scale for the Department in various locations, and will set photo control in two communities for the government of the N.W.T. Lands set apart for Indian use in 25 communities, mainly along the Mackenzie River, will be located and identified.

The Yellowknife office will carry out two inspections and continue its regulatory functions for Canada Lands within the Northwest Territories. The office will also continue to examine plans under the Land Titles Act.

### *Topographical Survey Division*

**Responsibilities**
The Division is responsible for producing and maintaining topographic maps of Canada for general purposes at scales of 1:250 000 and 1:50 000. These maps are produced to satisfy the needs of resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation. The Division provides technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects; it also provides technical and administrative services to the Interdepartmental Committee on Air Surveys.

**Review of 1981-82**
In 1981, the Division carried out extensive aerial photography in the North for 1:50 000 mapping. Indexes showing the present areas covered by aerial survey photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario, K1A 0E9. Topographic map indexes are available from the Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 479 new 1:50 000 maps were completed and 44 maps at the 1:250 000 scale were overprinted with revisions. Some maps for northern Canada were revised by adding data located by LANDSAT (land satellite) imagery.

**Plans for 1982-83**
The Division expects to produce 280 new 1:50 000 map sheets of areas in northern Canada during the coming fiscal year. This figure includes maps produced in-house and those done under contract.

In 1982-83, 42 000 km of photography will be ordered for 1:50 000 scale mapping in the Northwest Territories and Yukon Territory. About 65 per cent of the photography ordered in the North is usually completed successfully.

### *Reproduction and Distribution Division*

#### ***Responsibilities***

The Reproduction and Distribution Division is responsible for the photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products. It also reproduces maps for other federal and provincial government departments and agencies and for users in the municipal and private sectors. The Map Reproduction Centre provides these services on a cost recovery basis.

The Division, through the Canada Map Office (CMO), is also responsible for the storage, retrieval, mail order sales and distribution of all specialized maps acquired from other federal government departments, and all topographical and thematic maps, aeronautical charts and publications and related air information produced by the Surveys and Mapping Branch. The CMO also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

The National Air Photo Library (NAPL) is responsible for the indexing, archive storage, retrieval, sale and distribution of products and information related to federally owned or controlled aerial survey, airborne remote sensing and satellite imagery. The NAPL Reproduction Centre processes the film, reproduces the imagery and has custody of the original material.

#### ***Review of 1981-82***

The Division printed 462 line maps and 3 photomaps of the National Topographic Series. Printing services were provided for all Canadian Aeronautical Charts including nine new Joint Operation Graphic (J.O.G.) Charts. The Division provided printing services both to Environment Canada for 29 Northern Land Use Information maps, North Baffin Island area, and to Agriculture Canada for 2 maps showing the soil structure of Nahanni National Park. It also printed 28 charts of Northern Waters for the Canadian Hydrographic Service of Fisheries and Oceans.

The Canada Map Office received 578 orders for maps and charts from the Yukon and Northwest Territories for a total value of $120 187. It filled 23 requests from the Yukon Territory and 42 from the Northwest Territories for air photo products and services.

The map and chart consignment centre in Yellowknife was transferred from the Department of Indian and Northern Affairs to the Surveys and Mapping Branch, Legal Surveys Division, in the Yellowknife regional office. This office is now the main distribution centre for maps, charts and aerial photographic products in the Northwest Territories.

#### ***Plans for 1982-83***

The Division, through its Legal Surveys regional offices in Yellowknife and Whitehorse, will continue its efforts to publicize information on the availability and use of maps, charts, aerial photographic products and other services offered by the Surveys and Mapping Branch.

The Map Reproduction Centre will continue to provide map reproduction and other services in the coming year.

### *International Boundary Commission*

#### ***Responsibilities***

The work of the Commission is largely one of boundary maintenance and regulation of works within 3 metres of the boundary. The Commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

#### ***Review of 1981-82***

There was no boundary maintenance required for that part of the boundary north of 60°.

#### ***Plans for 1982-83***

There are no planned operations in the North for fiscal year 1982-83.

### *Geographical Services Directorate*

#### ***Responsibilities***

The Directorate is responsible for designing and producing small-scale maps, The National Atlas of Canada, aeronautical charts and flight information publications. It also operates a toponymic (geographic names) service and provides cartographic support services to federal and provincial departments and private agencies.

#### ***Review of 1981-82***

During the year, more maps of The National Atlas of Canada became available at the publication scale of 1:7.5 M portraying the country as a whole. All the maps include coverage of Canada's northern areas up to the North Pole. The following maps (available in separate French and English versions) have been published thus far:

Canada — Census Divisions and Census Subdivisions 1971
Canada — Divisions et Subdivisions et Recensement 1971

Canada — Indian and Inuit Communities Languages
Canada — Agglomérations et Langues Indiennes et Inuit

Canada — Energy
Canada — Énergie

Canada — The 31st Parliament
Canada — Le 31$^e$ Parlement

Canada — Results of the 32nd Federal Election February 18, 1980
Canada — Résultats de la 32$^e$ Election Fédérale, le 18 février 1980

Canada — Agricultural Lands
Canada — Terres Agricoles

Canada — Soil Capability for Agriculture
Canada — Les possibilités agricoles des sols.

Canada — Indian and Inuit Population Distribution.
Canada — Repartition des Populations Indienne et Inuit.

Canada — Heating Degree Days
Canada — Degrés-jours de chauffage

Canada — Growing Degree Days
Canada — Degrés-jours de croissance

Canada — Last Frost in Spring
Canada — Dernière Gelée du Printemps

Canada — First Frost in Autumn
Canada — Première Gelée d'automne

Canada — Frost-free Period
Canada — Période sans gel

The National Atlas maps have included themes on agriculture, climate, international relations, federal harbour facilities, federal election results and Indian and Inuit communities and languages. The Atlas also includes a general reference map of Canada.

Nine maps were completed depicting geodetic control networks in Canada, including those in the North.

A Gazetteer update in microfiche form was completed for the Northwest Territories.

Cartographic support services to other departments and agencies have included the production of a map for Environment Canada depicting waterfowl kill surveys from 1968-1979.

Aeronautical charting activity for pilots flying under Visual Flight Rules (VFR) in the Canadian North during 1981-82 included the production of 36 revised charts at the scale of 1:500 000 and 5 at the scale of 1:1 000 000. The Aeronautical Strip Chart, at a scale of 1:500 000, covering the Alaska Highway between Fort Nelson and Northway, Alaska, was also revised.

Various charts for pilots flying under Instrument Flight Rules (IFR) were revised periodically as shown: High and Low Altitude Enroute Radio Navigation Charts (revised every 56 days), IFR Supplement (56 days), Northern Supplement (56 days), Water Aerodrome Supplement (6 months), Canada Air Pilot Amendments (28 days), Designated Air Space Handbook (112 days), and the Flight Planning and Procedures Publication (revised every 6 months). All these publications have sections pertaining to flight in the Canadian North.

### *Plans for 1982-83*

The Directorate's planned mapping activities for the north, include completing maps for The National Atlas of Canada. Themes include: oil and natural gas pipelines; coal; road transportation; Indian and Inuit communities; Indian and Inuit population distribution; time zones; Canada at Confederation; Territorial evolution; Native peoples (1630); solar radiation; population distribution; drainage basins; cities, towns and villages; and the electrical transmission grid and the location of generating stations with an indication of energy source.

## *Geothermal Studies*

### *Responsibilities*

The Geothermal Service of the Division of Seismology and Geothermal Studies provides information on the thermal regime of the Canadian landmass and surrounding waters as related to geotectonics, permafrost distribution and characteristics, the potential for geothermal energy development and the thermal properties of earth materials. Field measurements of sub-surface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials form the data base.

### *Review of 1981-82*

The acquisition and preservation of deep temperature data in Arctic wells has continued. Eleven new sites in the southern Yukon were added in 1981; to date, precise temperature data to depths greater than 125 m are available at about 130 sites in the permafrost region of Canada. The results for these sites are compiled in the eight volumes of the Northern Data Collection, the most recent of which is Geothermal Series #13, published in 1982.

Thermal conductivity measurements have been made on samples from many of these sites. A preliminary analysis of several regions has demonstrated the variability of permafrost thickness and sub-surface thermal regime with terrestrial heat flux, lithology, and past temperature changes impressed upon the ground surface through climatic change, glacial history and transgressing or regressing coastlines.

A small contract is supporting a university student who is is carrying out a comprehensive geothermal/geomorphic study as an MSc. thesis, of the Sabine Peninsula, Melville Island. Production wells and a natural gas pipeline are proposed for this area as part of theArctic Pilot Project. All of this work receives logistic support from the Polar Continental Shelf Project, EMR.

Studies of the shallow thermal regime of permafrost have continued through field programmes at Alert, on Northern Ellesmere, at Illisarvik on Richards Island in the Mackenzie Delta, along the route of the proposed Alaska Highway chilled gas pipeline in the southern Yukon and in the more northerly Eagle Plains region. At Alert, the most northerly permafrost monitoring site in the world, observations of temperature, snow cover, density and thickness have continued in five boreholes to depths of 60 m for a period of two years, through the co-operation of the Department of National Defence and the National Research Council.

In the Mackenzie Delta at the Illisarvik site (a lake drained artificially in 1978), nine more holes were jet-drilled and instrumented with thermistor cables. Permafrost has grown from 5 to 8 m into the bowl-shaped unfrozen zone under the lake bed; this talik extends to approximately 15 to 30 m, at which depth permafrost is again encountered. Studies by several universities are providing additional information on the pre-drainage history of the lake, through studies of stable isotopes and radiocarbon dating, development of post-drainage landforms and the revegetation of the lake-bottom.

Under Energy Research and Development funding, a number of contract investigations have continued to study gas hydrates, the behaviour of soil moisture in cold regions, the impact of climate change and the implications for resource development. Oxygen and hydrogen isotopic studies have provided information on the lake history at Illisarvik and on the role of moisture migration in the refreezing process. The time domain reflectometry technique, developed in earlier contracts to measure the water content in soils, was used in a contract this year to assess its potential for monitoring soil freezing hydrology non-destructively. A contracted study of climatic change is underway to assess its implications for pipelines, principally in Yukon. Another contract continued the development of the Brillouin spectroscopy method to measure the elastic constants of Structure I and II hydrates.

***Plans for 1982-83***

The Geothermics group will attempt to keep pace with the increased needs associated with resource development, while continuing its important fundamental research. Contract investigations in the coming year will include joint experiments on the behaviour of a chilled pipeline at a controlled environment research facility at Caen in northern France. The Group will study the feasibility of constructing a similar research facility in Canada and examine the problems associated with instrumenting offshore wells for long-term permafrost studies. Finally, the Geothermal group will continue to visit field sites, to abandon sites at which observations are complete and to acquire new sites in as yet poorly documented areas.

### *Division of Geomagnetism*

***Responsibilities***

The Division of Geomagnetism provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps (including aeronautical and marine charts) about the angle between true north and magnetic north and its change from year to year. The Division provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding how fossil fuel and mineral deposits originated and where they might be located.

The Division of Geomagnetism records and analyses rapid variations of the earth's field, with periods measured in hours or seconds. Twelve magnetic observatories continuously record these changes in Canada. Three are in the auroral zone and five in the polar cap, north of the auroral zone. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical application in the North, in the fields of telecommunications, transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

***Review of 1981-82***

Magnetic observatories operated continuously through 1981-82 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form continued at Igloolik, where personnel of the Department of Indian Affairs and Northern Development operate the equipment. The magnetic repeat station at Whitehorse was re-occupied to provide information on the secular change of the earth's magnetic field required for the updating of marine and air navigation charts.

Paleomagnetic sampling of sedimentary formations in the Arctic Islands was continued with the collection of Devonian rock specimens on Ellesmere Island and Carboniferous and Permian specimens on Axel Heiberg. The first Devonian pole position from the Arctic Platform was established from a suite of rocks collected earlier on Prince of Wales Island. Analyses of rock units from the Little Dal Group and the Tsezotene Formation of the Mackenzie Mountains were completed. Further samples were collected in this region from the Redstone River Formation and other units.

***Plans for 1982-83***

The six magnetic observatories will operate throughout 1982-83. In the continuing program of secular change studies, magnetic repeat stations will be re-occupied at Pond Inlet, Clyde River, Igloolik, Repulse Bay, Coral Harbour, Cape Dorset, Inuvik, Sachs Harbour, Eureka, and Pangnirtung. In addition, the Division will make a special series of magnetic repeat observations at three stations (Old Fort Rae, Fort Conger, and Clearwater Fiord) occupied 100 years ago during the first International Polar Year of 1882-83. Paleomagnetic sampling of Cretaceous volcanic and sedimentary rocks from northern Ellesmere Island is planned. Analysis of rock units collected in the Mackenzie Mountains, N.W.T. will continue.

### *Division of Seismology*

***Responsibilities***

The Seismological Service of the Division of Seismology and Geothermal Studies determines the parameters of all significant earthquakes in northern Canada and offshore areas, and provides assessments of earthquake risk. Research on the structure and properties of the Arctic lithosphere is conducted by deep-sounding experiments, by surface wave dispersion studies and by study of seismic wave velocities from Arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for calculations required for earthquake-resistant design. A network of seismograph stations is maintained in northern Canada, and field experiments on deep seismic sounding are conducted.

***Review of 1981-82***

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher, Inuvik and Yellowknife and regional observatories continued to operate at Baker Lake, Whitehorse and Igloolik, the latter with co-operation from the staff of the Igloolik Research Laboratory. The three regional seismological observatories in the southwestern Yukon, near Dezadeash, Kluane Lake and Koidern, established in a joint venture with Foothills Pipe Lines (South Yukon) Ltd., were closed at the termination of the joint venture. A new regional observatory was established at Haines Junction, with the monitor installed at the Parks Canada Visitors Centre, In a joint venture with Dome Petroleum, two additional regional obsevatories were established; the special network now monitoring the seismicity of the Beaufort Sea includes stations at Sachs Harbour, Tuktoyaktuk, Nicolson Point and Komakuk Beach. The Yellowknife seismological array continued operation and the automatic data facility continued to send digital information on detected seismic events to the Ottawa computer. Seismic data on global events detected at standard observatories are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife detection bulletin is transferred by computer link to research groups in the U.S. and U.K.

Routine analysis of all detected earthquakes in and near the Canadian North continued. Bi-monthly lists of all earthquakes are prepared about six months after their occurrence, and final findings are published in annual catalogues. Rapid determinations are made of earthquakes of special concern or scientific interest, such as the magnitude 5.6 event in southern Davis Strait on August 24, 1981 and the magnitude 5.3 event on the Arctic Ocean coast northwest of Ellef Ringnes Island on November 21, 1981.

Research on seismic risk in northern Canadian has continued. Models of earthquake source zones and revised strong groud motion attenuation relations have been employed to derive new probabilistic ground motion maps of peak acceleration and peak velocity at probabilities of exceedance of 10 per cent in 50 years. This information has been adapted to proposed new seismic zoning maps for a future edition of the National Building Code. The new maps also provide improved estimates of relative levels of earthquake risk in the North for facilities and structure not included in the normal provisions of the Building Code.

Special studies aimed at improving the understanding of earthquake potential in regions of petroleum exploration in the northern offshore have begun. In August 1981, an experimental deployment of ocean-bottom seismographs was undertaken in the Beaufort Sea in co-operation with the Atlantic Geoscience Centre and Dome Petroleum. A review has also been made of the geological and geophysical information available to delineate the earthquake zones affecting the Labrador Shelf.

A further interpretation of the LOREX refraction data has indicated a crustal root beneath the Lomonosov Ridge extending to a depth of about 28 km. The suggested crustal thicknesses of the adjoining Markarov and Fram basins are near 13 and 16 km, respectively. The velocity structure supports a theory favouring the ridge as a fragment split-off from the Barents-Kara Sea shelf.

***Plans for 1982-83***

The seismological observatories in the North and the Yellowknife seismological array will be maintained. A fifth regional observatory is planned as part of the joint venture with Dome Petroleum. Planning is underway in co-operation with industry to install additional stations on the coasts of Labrador and Baffin Island to improve the monitoring of offshore seismicity in those regions. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue on a current basis. Large, potentially damaging earthquakes will be identified and reported on as soon as possible. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available.

The special studies of Beaufort Sea and Labrador Sea seismicity will continue. The earthquake data file for these areas will be critically assessed and, where required, re-evaluated. The correlation of seismicity with other geological or geophysical features will be studied to identify active seismogenic zones and to improve current estimates of earthquake risk. A high priority will be given to areas where resource development is currently taking place.

As part of the CESAR project, detailed plans have been developed jointly with the Atlantic Geoscience Centre on the crustal refraction experiment over the Alpha Ridge and adjoining basins. Preparation of related material for the summer 1982 sea lift is in progress.

## Polar Continental Shelf Project

***Responsibilities***

The Polar Continental Shelf Project is responsible, first, for carrying out scientific investigations unique to the Arctic and, second, for maintaining and improving scientific logistic support systems in the Arctic. In fulfilling this second responsibility, the Department provides and maintains base camps, a radio network and aircraft with experienced crews. The PCSP supports research in disciplines within the mandate of EM&R and other government departments, and field resources are also made available to approved university and other non-government research projects.

***Review of 1981-82***

Field work, carried out from mid-February to late September, was co-ordinated from PCSP base camps at Tuktoyaktuk in the Mackenzie Delta and Resolute on Cornwallis Island.

In 1981, PSCP supported a total of 166 scientific field parties in the Arctic. One oceanographic project, EUBEX (Eurasian Basin Experiment), was conducted in international northern waters. A Twin Otter aircraft equipped with a winch and sampling equipment visited 35 stations to collect high quality data as far east as 31° East and 85° North.

The main annual hydrography and gravity project was conducted in M'Clintock Channel and Peel Sound using through-the-ice sounding techniques with rain devices mounted on helicopters. Observations were recorded at 9971 stations. A four-year physical oceanography program in the Northwest Passage was begun with studies in Barrow Strait.

Several investigations of permafrost, oceanography and bathymetry were undertaken in the Beaufort Sea. Wildlife studies in 1981 were highlighted by studies of the Beverley and Porcupine caribou herds. A multidisciplinary group of scientists worked out of one campsite near Old Crow, Yukon, setting a precedent and an example for such studies and operational methods in the future. One of the more exciting archaeological events of the field season was the photographing of the sunken vessel Breadalbane, a supply ship sunk in 1853 off Beechey Island in 100 metres of water.

The Polar Continental Shelf Project supported the Arctic research of the following agencies in 1981:

Arctic Institute of North America
British Royal Navy
Defence Research Establishment Pacific
Energy, Mines & Resources Canada
Department of the Environment
Department of Fisheries & Oceans
Department of Indian Affairs & Northern Development
Government of the Northwest Territories
Government of Yukon
J.A. MacInnis Foundation
National Geographic Society
National Museums of Canada
Northern Alberta Institute of Technology
Sir Sanford Fleming College
Scott Polar Institute
Swiss Federal Institute of Technology
Transglobe Expedition
Universities of Alberta
    British Columbia
    Brock
    Calgary
    Carleton
    Guelph
    Hokkaido
    Lakehead
    McGill
    McMaster
    Ottawa
    Reading
    Saskatchewan
    Toronto
    Victoria
    Washington
    Waterloo
    Western Ontario
    Windsor
    Wisconsin

The following is a summary of work to which PCSP contributed support:

*Archaeology:* Old Crow Area
*Investigator:* J. Cinq-Mars, National Museum of Man

A scientific consortium of several parties, all sharing a common interest, was formed to excavate Pleistocene exposures and to conduct paleontological and paleobotanical investigations. A major discovery was made with respect to paleoecological studies. Two rare species of beetles were found, that were common in Old Crow Pleistocene assemblages, but which had never been collected alive in Yukon before.

*Archaeology:* Bache Peninsula
*Investigator:* P. Schledermann,
Arctic Institute of North America

A survey was conducted to further investigate and excavate camp features situated along the "early Dorset" ridge on Longhouse site.

A good faunal sample and diagnostic artifacts were retrieved, placing the occupation tentatively in the early (to middle) range of the Dorset period. The trait of joining hearth features for probable special occasion gatherings seems to have been practised during most of the Dorset continuum. The testing of a third depression also revealed a deeply-buried, Ruin Island type dwelling. The site produced several pieces of iron of apparent Norse origin. There are no earlier structures on the site, clearly suggesting that we are working with the pioneering appearance of the Thule culture in this region and perhaps the eastern High Arctic. Fire hearths have not been found within any of the longhouses. The long hearth rows associated with the Dorset occupation on these sites probably related to very specific ceremonial occasions, when communal activities took place as part of a particular ritual. It is now quite evident that Arctic Small Tool tradition camps from various time periods are much more numerous in this area that was previously believed.

*Archaeology:* Eastern Axel Heiberg and Northern Ellesmere Islands
*Investigator:* P.D. Sutherland, McMaster University

Full scale excavations were carried out at Buchanan Lake, a Dorest/Thule settlement on Axel Heiberg Island and at Maxwell site, a Thule occupation on Gilman Bay, Ellesmere Island.

Excavations at Buchanan Lake revealed evidence of a far more extensive Dorset occupation than was previously thought to have occurred. These excavations may provide much useful information on Dorset settlement patterns and the relationship between late Dorset and early Thule cultures. Late Dorset and early Thule people may have come into contact at this site.

A Thule hunting camp was located through a helicopter survey in Clements Markham Inlet. The camp is the most northerly Thule site to be investigated in Arctic Canada.

*Archaeology:* Somerset Island
*Investigators:* E. Bielawski and S.C. Cole,
Northern Heritage Society, N.W.T.

The objective of the Northern Cultural Heritage Project is to combine scientific research in the Northwest Territories with an education and employment program for young northerners. In the summers 1979 to 1981, 20 young people from different communities throughout the Territories were employed and trained as scientific field assistants. The education and training component, designed specifically for Inuit and other young northerners, provides an opportunity for them to develop skills, obtain work experience and expand their future career and employment options. The Project also gives them an opportunity to learn about their northern heritage by studying Arctic history, prehistory and anthropology.

*Archaeology:* King William Island,
Adelaide and Boothia Peninsulas
*Investigator:* J.M. Savelle, University of Alberta

The 1981 research, in conjunction with that conducted during 1980, has contributed significantly to the archaeological information on 'classic' Thule, 'modified' Thule, and early historic Netsilik Inuit in the Netsilik 'core' area and peripheral regions. Research has yielded information on such topics as territorial bases, subsistence economies, settlement distributions, material culture, and social patterning.

*Archaeology:* King William Island
*Investigator:* O.B. Beattie, University of Alberta

The undisturbed remains of a Sir John Franklin expedition member were discovered near Booth Point on the southeast corner of King William Island. Subsequent analysis of these remains has shown them to be from a 20 to 30 year old male of probable Caucasoid origin who was suffering from scurvey at the time of death. Other skeletal indications provide evidence of cannibalism.

This survey has produced the only in situ excavation, documentation and osteological analysis of human skeletal remains from the last Sir John Franklin expedition. Other skeletal information suggests that the accepted path of retreat may not in fact be the correct one.

*Archaeology:* Banks and Victoria Islands
*Investigator:* C.G. Hickey, University of Alberta

A project was conducted to determine the effects on Copper Inuit culture of the sudden availability of large quantitites of valuable materials through the salvaging of H.M.S. Investigator and/or her caches between 1854 and 1890.

Three archaeological sites were mapped. An "Apple II Plus" microcomputer, used in the field and powered by a wind charger, worked effectively. The survey was successful in delimiting the apparent northern limits of nineteenth century Inuit occupation on Banks and Victoria Islands.

*Archaeology:* Banks Island
*Investigator:* T. Will, University of Alberta

The main objective of this research is to reconstruct the subsistence economy of 19th Century Copper Inuit who lived on Banks Island. Food bone refuse is being used to provide information on butchering methods, animal species hunted for food and seasonal and geographical variations in the Inuit subsistence behaviour. Muskox was the most common food species and snow geese were frequently taken. Caribou, however, are noticeably absent from the research sites.

*Archaeology:* Navy Board Inlet
*Investigator:* G. Mary-Rousselière

Investigations of the puzzling house complex N73, continued. Six square meters were completely excavated, sometimes to a depth of 80 cm. Among the more than 1050 artifacts collected are several ivory and wood carvings, the most interesting of which is a small Greenland whale carved in ivory. Six or seven samples of cut human hair have been found in Dorset sites of the region. This indicates that Dorset people may have cut their hair with microblades.

*Ecology:* Arctic char resources, Lake Hazen
*Investigator:* A.H. Kristofferson, Fisheries and Oceans.

To determine the present extent of angling pressure on charr the extent to which charr stocks in the lake are being affected by fishing, gillnets of a variety of sizes were set to gather samples of charr for standard biological information. Beach seining was carried out at a number of locations to collect young charr. Arctic charr is abundant and apparently in good condition. The structure of this stock is extremely complex. Remarkably, characteristics are identical to those of fish sampled by Dr. I.A. McLaren in 1958. We conclude that simple Arctic ecosystems may not be as unstable as was previously postulated.

*Biology:* Caribou, Beverly herd, Aberdeen Lake
*Investigator:* A. Gunn,
Government of the Northwest Territories

The immediate objective was to collect baseline information on the behaviour of undisturbed caribou during their calving and post-calving periods. Six hundred and fifty-eight behavioural samples were obtained, describing activity patterns of cows and their calves. Data were also obtained on the frequency and duration of nursing bouts, aggressive acts and alarm stances. The period of calving was earlier and more prolonged than usual, and conditions of snow and weather were favourable to high calf survival.

*Biology:* Caribou, Porcupine herd, Dempster Highway
*Investigator:* D.E. Russell, Yukon Government

Fixed-wing and helicopter aircraft were used to examine spring migration of the Porcupine herd. To aid in monitoring the movements of these animals to their spring staging areas in Yukon, ten bulls were radio-collared. This also helped to relocate bulls during post-calving census period.

Bulls remained in their late wintering areas until April 20 and many crossed the Dempster near Chapman Lake. Many crossed the Eagle Plains to the Keele Range.

During late winter, cows moved from concentration areas east of the highway across the Eagle Plains and into the Keele Range, across the Porcupine River in the vicinity of the Bluefish River. All cows collared in the area remained in the Wernecke Mountains during spring migration, and surveys were able to identify timing and location of calving for this herd.

*Biology:* Freshwater fish, Central Arctic Islands
*Investigator:* B. Stewart, Fisheries & Oceans

Arctic char and sculpin were the only fish species caught in lakes north of 74° latitude. Data on fish growth rates, diet, parasitism, reproduction, distribution and abundance are currently being analysed. This information, together with other data, will be drafted onto land use maps.

*Biology:* Fish Habitat, Tuktoyaktuk, N.W.T.
*Investigator:* W.A. Bond, Fisheries & Oceans

During the summer, the nearshore appears to serve as an important migration corridor through which fish gain access to important feeding, rearing and overwintering areas. Recent studies indicate that certain species migrate from coastal waters to fresh water lakes located on the Tuktoyaktuk Peninsula. A two-year study was started to determine the significance of fish habitat of two watersheds draining into the harbour from the Tuk Peninsula.

*Biology:* Heavy Metal Monitoring,
Little Cornwallis Island, Strathcona Sound
*Investigator:* S. Metikosh, Indian & Northern Affairs

Samples of sediments, seaweeds, bivalve molluscs and sea urchins were collected from the vicinity of the Nanisivik and Polaris Mines. These samples will provide a firm data base for isolating the trends that are occurring near the mines relative to the uptake of metals and their movement through the food chain. At both sites, a number of one-half m grid photographs were taken to obtain a pictorial assessment of the abundance of marine fauna.

*Biology:* Insects, Mackenzie Delta
*Investigator:* R.A. Ring, University of Victoria

Nine species of insects from three different geographical regions of Canada have been examined for their tolerance to freezing conditions, their supercooling capacity, water content and changes in biochemical characteristics during acclimation to sub-zero temperatures for varying periods of time. Glycogen levels in all species declined significantly during this period. Many variations in freezing tolerance were apparent among the six test species. The major conclusion that can be drawn from these studies is that the various species have different ways of adapting to low temperatures in order to survive.

*Biology:* Ornithology, Greater Snow and
Brant Geese Eastern Arctic
*Investigator:* A. Reed, Environment Canada

A survey was conducted on goose productivitiy and the effects of their grazing on vegetation in northern Baffin Island.

Of particular interest was the relatively small number of Greater Snow Geese observed on southern Ellesmere in contrast to the much larger numbers reported in that area in the early 1970's. Observations on the Melville Peninsula (Roche Bay) in 1980 and 1981 indicated a substantial decrease from 1979 in the number of breeding Snow Geese. The limited extent of these surveys means that their productivity can be estimated only roughly.

An encouraging "spin-off" from the aerial surveys was the finding of two small Ivory Gull colonies on the Bordeur Peninsula. For a long time, the Inuit of northern Baffin Island have been reporting that the species had been nesting on Brodeur but scientists had not been able to verify this fact.

*Biology:* Ornithology, Migratory birds, Melville Peninsula
*Investigator:* P. Boothroyd, Environment Canada

Development of iron ore deposits located on the Melville Peninsula has been proposed. Aerial surveys and ground reconnaissance were conducted to determine the importance of the area for migratory birds during the breeding season and to determine the potential effects of developing the iron ore deposits. Information on vegetation communities in the area was also collected to permit analysis of Landsat data and production of vegetation distribution maps.

*Biology:* Ornithology, Peregrine Falcon, Northern Yukon
*Investigator:* D.H. Mossop, Yukon Government

The entire historical breeding habitat of the peregrine was searched for detailed population monitoring. Gyrfalcon research on the north slope involved measurement of various parameters vital to developing criteria for managing the population.

*Biology:* Ornithology, Eastern Arctic
*Investigator:* Austin Reed, Canadian Wildlife Service,
Environment Canada

Surveys of breeding geese and banding operations were conducted but, because of poor weather and other logistical problems, the program was severely limited.

*Biology:* Ornithology, Seabirds, Hell Gate and Cardigan Strait
*Investigator:* R.W. Prach, Canadian Wildlife Service, Environment Canada

Aerial surveys to document the use of western Jones Sound by marine birds continued. Preliminary estimates of their distribution and abundance in relation to specific marine habitats have been made. The objective of the long-term study is to investigate possible relationships between condition and breeding success and the availability and proximity of marine feeding areas to nesting colonies and sites.

*Biology:* Ornithology, Seabirds, Mackenzie Delta, Anderson River
*Investigator:* T.W. Barry, Canadian Wildlife Service, Environment Canada

Nine aerial surveys were carried out to locate the major nesting and brood-rearing areas of common eiders in the Beaufort Sea, Amundsen Gulf and Prince of Wales Strait. These surveys allowed evaluation of important habitat for sea and coastal birds. The surveys made it possible to assign priorities for protecting the habitat areas in light of proposed development schemes. The only known nesting habitat of the Eskimo Curlew was investigated near Lac Rendez-vous and Franklin Bay.

*Biology:* Ornithology, Migratory birds, Baillie Islands, Yukon Coast
*Investigator:* L. Allen, Canadian Wildlife Service, Environment Canada

A bird study was initiated to determine the species, number and distribution of birds in the King Point area and to identify any critical areas for birds which might be affected by port development. Baseline data were gathered on the species, number and distribution of moulting seaducks to compare bird usage before and after harbour development in McKinley Bay. Using these and all available data on bird distribution along the Beaufort Sea coast, maps will be compiled to delineate important bird habitat vulnerable to oil pollution. These maps can be then used to assist in oilspill clean-ups.

*Biology:* Ornithology, Seabirds, Penny Strait
*Investigator:* S.D. MacDonald, National Museum of Natural Sciences

The annual investigations of nesting Ross's Gulls, and sea birds associated with the polynias in Penny Strait continued. Only one pair of Ross's Gulls was present. Common eiders in Penny Strait were reduced in numbers, and nest predation by bears was much in evidence. Exploratory studies of the Ivory Gull colonies on the Ellesmere ice cap were begun. Arctic hares were collected for studies on locomotion and energy reserves. The results indicate that they have the same muscle properties as other prairie hares do and that they contain extremely small fat energy reserves.

*Biology:* Ornithology, Seabirds, Coburg and Baffin Islands
*Investigator:* D.N. Nettleship, Canadian Wildlife Service, Environment Canada

A total of 3073 Thick-billed Murre chicks were banded at Coburg Island between August 10-25. Two hundred and thirty-three of the chicks banded were weighed and measured; 69 of these were re-examined 8-10 days later providing growth-increment measures.

Coburg Island is an important site for studying the distributions, movements, survival rates and breeding performance of the Jones SoundLancaster Sound populations of Thick-billed Murre and Black-legged Kittiwake. Major banding operations of Northern Fulmars at Baillarge Bay, Baffin Island are not recommended. Unstable and friable rock presents too dangerous a situation for the researchers.

*Biology:* Reindeer Rangeland, Tuktoyaktuk Peninsula
*Investigator:* R.A. Sims, University of British Columbia

The reindeer rangeland resources of the Tuktoyaktuk Peninsula area are being studied using a multi-stage remote sensing approach. At a reconnaissance level, LANDSAT scenes have been used to produce an image-mosaic with major rangeland units delineated. On the ground, vegetation, soils and general environmental features were described for 112 sites. Aerial transects were flown so that air photos and LANDSAT images could be checked. Some of the results can be immediately applied in developing plans for managing the reindeer herd.

*Biology:* Zoology, Caribou Northern Yukon
*Investigator:* A.M. Martell, Canadian Wildlife Service, Environment Canada

The Porcupine Caribou Herd arrived on its calving ground about mid-May in 1981. Calving peaked about June 3-5 and cows and calves then moved west into Alaska. Information on animal activity patterns and habitat selection was gathered. At the time of calving, aerial surveys of radio-collared caribou showed that the bulls were distributed south and east of the calving grounds. The planned census of the herd could not be carried out because the cows and calves returned from Alaska unusually early (late June) and mixed with the bulls, and because no large aggregations formed.

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| *Biology:* | Zoology, Caribou, District of Keewatin |
| *Investigator:* | F.L. Miller, Canadian Wildlife Service, Environment Canada |

During June, 1981 an aerial survey was made of dead caribou calves on the Beverly herd calving ground. Seventy-nine calves and seven cows were found. Post-mortem examinations were conducted to determine the causes of death. Predation accounted for 54.2% of the deaths; 52.8% by wolves and 1.4% by grizzly bears. Primary or secondary stillborn or premature accounted for 34.3%; separation or abandonment 4.3%; pneumonia 2.9%; trauma 2.9% and shock 1.4%. Of the 79 dead calves, 27 were females, 27 were males. The sex of the remaining 25 could not be determined. Four of the seven cows had died of complications associated with giving birth, two from grizzly bear predation and one from wolf predation.

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| *Biology:* | Zoology, crustaceans, Tuktoyaktuk, N.W.T. |
| *Investigator:* | J. Loaring, University of Windsor |

A study of the ecology and population genetics of species of the crustacean Daphnia was conducted. Preliminary results indicate that Daphnia *pulex* populations from the western Arctic are genetically diverse. However, the diversity in populations found at Old Crow does not greatly exceed that present in populations from Inuvik, Tuktoyaktuk or Ontario.

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| *Biology:* | Zoology, Bowhead whales, Beaufort Sea |
| *Investigator:* | M.A. Fraker, L.G.L. Ltd. |

For two reasons, the southeastern Beaufort Sea was chosen as the location for carrying out research during the 1980 and 1981 summers on the behaviour of Bowhead whales, their responses to disturbance and feeding habits. First, the conditions for observing them are good in that region because the whales use the area for extended periods and the weather conditions are favourable. Second, offshore exploration is well underway in Canadian waters of the Beaufort Sea; accordingly, there are opportunities to observe whales in the presence of full-scale industrial operations. The experimental approach involved pre-disturbance control observations, disturbance and post-disturbance recovery observations.

Observations were made of Bowheads near a drillship, near industry boats, near full-scale underwater seismic operations and near a large dredging operation.

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| *Biology:* | Zoology, seals, whales, Arctic Waters |
| *Investigator:* | T.G. Smith, Environment Canada |

Studies of Arctic fox population dynamics were conducted in the Amundsen Gulf area. Concurrent studies of ringed and bearded seal fast-ice breeding habitat were done in the same area. Studies, in the Dundas Harbour area, of ringed seal behaviour and polar bear predation along the ice edge were initiated. Aerial surveys of ringed and bearded seals and beluga whales were done in Parry Channel. Behavioural studies of beluga whales were conducted from Cunningham Inlet during their period of aggregation in the estuary from early July to the end of August.

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| *Biology:* | Pacific herring, Fish and Marine Mammals, Mackenzie Delta and Inshore Beaufort Sea |
| *Investigator:* | D.V. Gillman, Fisheries & Oceans, Winnipeg |

A total of 1178 Pacific herring were captured and sampled. Data were collected on maturation sequence, gonad condition, spawning dates and age and growth patterns. Samples of roe were taken, processed on site and shipped south for quality testing and comparison with other herring roe products. The purpose was to determine whether a commercial roe harvest would be feasible in the Mackenzie Delta and inshore Beaufort Sea.

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| *Biology:* | Plankton, Garrow Lake, Little Cornwallis Island |
| *Investigators:* | M. Dickman, Brock University<br>M. Ouellet, University of Québec |

Garrow Lake is the most northerly meromictic lake discovered to date. A survey was conducted to sample its water chemistry, phytoplankton, zooplankton and photosynthetic bacteria. The top layer of the lake profile (0-12 m) displayed relatively low levels of electrolytes. Below this layer, the major electrolytes increased rapidly from 12-20 m. It is at the boundary layer between dissolved oxygen and hydrogen sulfide, that the photosynthetic bacteria are located. The photosynthetic bacteria mark the transition from the base picnocline, halocline and chemocline to the top of the permanently-stagnant monimolimnion. The salinity of the water below the halocline is three times greater than that of sea water.

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| *Biology:* | Polar Bear, Baffin Island |
| *Investigator:* | R. Schweinsburg, N.W.T. Wildlife Service |

During April and May of 1981, on northeast Baffin Island, 65 polar bears were tagged. The objectives were: to determine population size, range and distribution; to assess quotas for Cycle River and Broughton Island; and to assess the impact of oil development. No concentrations of bears were observed, while vast areas held few or no bears. Bears or their tracks were found offshore as far as 160 km. The low density of bears and the long movements of marked bears into the study area are unusual.

*Biology:* Polar Bear, Radstock Bay, Dundas Island, Rae Point
*Investigator:* I. Stirling, Canadian Wildlife Service, Environment Canada

Polar bear management and impact assessment studies have been facilitated by examining existing data related to the animals' habitat utilization hunting efficiency, man/bear conflicts, bear interactions and movements. Research continued on the ecological interrelationships of polar bears in the High Arctic. The biological importance of polynias to overwintering populations will be evaluated by studying winter and early spring distribution and abundance in and out of polynia areas. In addition, a monitoring study on the effects of industrial activities on the distributions and abundance of seals in the eastern Beaufort Sea was begun in 1981.

*Botany:* Tuktoyaktuk area and Sachs Harbour
*Investigator:* J.M. Gillett, National Museum of Natural Sciences

Plant material of herbarium specimens was obtained for use in an International Exchange Program. Photographs will be used in an Arctic Plant Manual, which is in preparation.

*Botany:* Cornwallis Island and Queen Elizabeth Islands
*Investigator:* John Peach, London, England

Investigations were undertaken into the distribution and classification of the forms of Saxifraga oppositifolia in the Resolute area of Cornwallis Island and other parts of Queen Elizabeth Islands. The two forms of particular importance at Resolute are *f. schofieldii* and *f. albiflora*. A narrow petalled form was widespread, and specimens secured on other islands around Cornwallis led to the conviction that the form is distinct enough to merit botanical recognition.

*Botany:* Lake Hazen
*Investigator:* J. Gould, University of Toronto

This study involves a quantitative description of the major plant communities of the Lake Hazen Camp area, but excludes analysis of their possible ages as related to the Late Wisconsin glaciation. Intensive sites were established in eleven different communities; the depth of the active layer and slope aspect and angle were measured and soil samples were taken from different horizons in pits dug at each community. Moisture is the limiting factor affecting plant growth; increasing elevation does not appear to be a limiting factor.

*Botany:* Ecology, Alexandra Fiord
*Investigators:* J. Svoboda and B. Freedman, Universities of Toronto and Dalhousie

The broad objectives are to determine the environmental factors which influence plant diversity and primary production in an uplifted lowland of favourable microclimates and moisture regimes. Within the scope of these objectives, studies were carried out of meso- and microclimate, soils, decomposition, distribution and production of plant communities and the aut-ecology of certain plant species.

*Botany:* Ecology, Oil Spills, B.I.O.S., Cape Hatt, Baffin Island
*Investigator:* P. Blackall, Environment Canada

Over thirty tonnes of crude oil were released during the summer. The test oil plots laid in 1980 were re-sampled and surveyed, while the shoreline cleanup countermeasures went very successfully. A collection of additional physical data (oceanographic and meteorologic) began, in final preparation for predicting the optimum spill conditions. Little surface oil escaped from the boomed area. All losses were limited to thin sheens. The extent of the impact of the dispersed oil will not be known until the post-spill samples are analysed. The B.I.O.S. Project results now appear to be of great value; it is now certain that the last two years of the Project are critical and must proceed.

*Geodesy:* Victoria, Prince of Wales and King William Islands
*Investigator:* D.L. MacQuarrie, Energy, Mines & Resources Canada

Projects were carried out to strengthen and densify existing horizontal controls. Two doppler base stations and two new doppler stations were spirit levelled. Two existing traverse side-shot stations were upgraded with four distance measurements. Twenty-nine existing horizontal control stations were targeted and 84 new doppler positions were established.

*Geology:* Biostratigraphy, Devonian and Upper Silurian, Eastern Arctic
*Investigator:* B. Jones, University of Alberta

Twelve sections were examined in detail over a total of 5 500 m in which the dominant faunal element was brachiopods. This collection of approximately 6 000 Devonian bivalves from McCormick Inlet on Melville Island is rare and includes some of the best found anywhere in the world. Detailed analysis of the clay mineralogy and stable isotope geochemistry are now being examined for 3 500 m of Blue Fiord Formation in which the dominant faunal element in these Upper Silurian rocks was again brachiopods.

*Geology:* Bedrock Weathering, Ellesmere Island
*Investigator:* S.H. Watts, Sir Sandford Fleming College

Under arid Arctic conditions, rates of physical weathering of outcrop surfaces are largely influenced by their mineral composition and texture. Hornblende has permitted accelerated weathering in otherwise massive, resistant rocks. Hydration and salt crystallization are recognized as major processes in outcrop deterioration. The age of these highly-weathered bedrock forms needs to be established in order to decipher the late glacial and post glacial histories.

*Geology:* Devon and Ellesmere Islands
*Investigator:* L.C. Coleman, University of Saskatchewan

A reconnaissance search for meteorites was carried out on the ice cap of Devon Island and in the area where a large number of valley glaciers converge, with no outlet, in the southeastern part of Ellesmere Island.

It had been suggested that concentrations of meteorites on ice cap surfaces, similar to those that had been found in the Antarctic in recent years, might be found in the Canadian Arctic.

Unfortunately, snow accumulations during 1981 were such that any meteorites on the ice surface would have been covered.

It would seem possible to carry out such a search successfully by waiting for a protracted chinook or for rain to clear the snow from the ice cap surface.

*Geology:* Stratigraphy, Old Crow, Yukon Territory
*Investigator:* D.K. Norris,
Energy, Mines & Resources Canada

A re-examination of the stratigraphic succession on the northeast corner of Old Crow Flats revealed that the resistant beds capping many of the hills were probably of late Paleozoic rather than Jurassic age. Moreover, the highly-deformed stratigraphic succession along the Porcupine River upstream from the International Boundary is most probably entirely of Proterozoic age. Black shales exposed on the south flank of the Old Crow Range were confirmed to be of Middle Jurassic age.

*Geology:* Stratigraphy, southern Ellesmere Island
*Investigator:* A.V. Okulitch,
Energy, Mines & Resources Canada

Regional reconnaissance mapping and detailed stratigraphic and tectonic studies in southern Ellesmere Island were completed. Stratigraphical investigations consisted of systematic examination of the entire Paleozoic rock column. Cambrian to Middle Devonian formations are mostly carbonates. Middle and Upper Devonian rocks are terriginous clastics deposited in non-marine environments. Structural investigations included delineation of major structures formed during Ellesmerian and Eurekan deformation. The complexity of structures and degree of crustal shortening are considerably greater than were formerly suspected.

*Geology:* Classification, Viscount Melville Sound
*Investigator:* D. Welch, Environment Canada

An open-ended classification system is being developed based on landform associations that occur where the land and sea meet. This system will accommodate the variety of shore environments found along the Arctic coasts and will enable us to interpret air photographs rapidly. Each class is defined in terms of a typical range of morphology and materials. In 1981, the study included Bathurst, Melville, and northern Victoria Islands for a total of 20 map sheets. Landforms are mapped and classified by interpreting photos taken from the air on reconnaissance flights. Photos were also taken from landings in certain areas to "cross-check" the aerial photos. Coupled with other data on the Northern Land Use Information Series maps (such as data on geology, surficial materials, vegetation, marine mammals and sea ice conditions), this shore information can be used to corroborate interpretations derived from air observations.

*Geology:* Coastal processes, Bylot Island,
Northern Baffin Island and Radstock Bay
*Investigator:* R.B. Taylor,
Energy, Mines & Resources Canada

It was noted that waves were tossing modern beach sediments to the top of the high rock cliffs along north Bylot Island, thus substantiating the belief that East Lancaster Sound can be a high-wave energy environment. Re-surveys of beach profiles near Pond Inlet showed that the beaches have been built up substantially since 1979. Other observations also provide the first indication that ground ice and ice-bonded sediment may affect the stability of the coarse-grained sediment beaches of Bylot Island, as they do along the shores of the Beaufort Sea.

*Geology:* Glacial geomorphology,
Northern Ellesmere Island
*Investigator:* J. England, University of Alberta

Field work was concentrated on Clements Markham Inlet and on the south-central margin of the Hazen Plateau. The objectives were, first, to improve the data base pertaining to the magnitude and timing of former glaciations and relative sea levels; second, to investigate the nature of extensive raised marine deposits to better understand the processes which operate in high Arctic fiord environments; and third, to core certain lakes that may contain long-term and continuous paleoclimatic records. When combined, these data should help to improve our understanding of high latitude environmental change, which departs significantly from existing models developed in mid-latitudes.

*Geology:* Geomorphology, Mackenzie Delta
*Investigator:* J. Ross Mackay, University of British Columbia

At the Illisarvik Drained lake experimental site, work continued on measuring the growth of permafrost, the development of the active layer, the time of ice-wedge cracking and the rate of ice-wedge growth, subpermafrost pore water pressures, subpermafrost pore water salinities and electrical freezing potentials. Accurate temperature measurements shows that the "frozen fringe" (the zone between the 0°C isotherm and growing ice lens) may occupy a zone of perhaps a metre in aggrading permafrost, in contrast to the several millimetres observed in some laboratory experiments. The time of ice-wedge cracking and direction of propagation has been accurately measured with elapsed timers. Upward cracking from beneath a frozen lake has been confirmed, insofar as is known, for the first time. In the old Horton River Channel there is good evidence to show that ice wedges greater than 35 cm in width have grown in the past 200 years. Elsewhere the downward movement of water in the still frozen active layer in the thaw period has been monitored and indications are that there may be a summer downward movement and freezing of water. Furthermore, the high ice content layer so often found near the top of permafrost appears to develop partly from upward migration of water in winter and downward migration in summer.

*Geology:* Geomorphic processes, Banks Island
*Investigator:* H.M. French, University of Ottawa

Investigations on southwest Banks Island of permafrost and ground ice bodies exposed in coastal sections were continued. Recoveries of Woodhead seabed drifters provided further evidence to support a model of inferred sediment transport.

*Geology:* Periglacial features, Resolute
*Investigator:* A.L. Washburn, University of Washington

Research activities focused on selecting and instrumenting several experimental sites: a gelifluction lobe near the northwest end of "Airport Ridge" and a series of sorted circles along the north shore of the pond, west of the north antenna field. Research results included initial baseline readings at the experimental sites and recognition of several small palsalike features, apparently hitherto unreported from the High Arctic.

*Geology:* Permafrost, Tuktoyaktuk, N.W.T.
*Investigator:* S. Kinosita, Hokkaido University

Studies were conducted to clarify the physical and chemical properties of the active layer from the viewpoint of the behaviour of the retained water and their relationship to environmental conditions such as ground morphology, fauna and vegetation.

*Geology:* Volcanology, Petrology, Somerset Island, Bathurst Island
*Investigator:* R.H. Mitchell, Lakehead University

Detailed regolith mapping and a ground-based magnetic survey of the Ham kimberlite diatreme on Somerset Island was accomplished. The diatreme, a multiple intrusion consisting of at least three varieties of kimberlite, also proved to be a new locality for mantle-derived spinel and garnet lherzolites. All of the dikes sills and vents have now been examined in the northern portion of the Freemans Cove volcanic region of Bathurst Island. This suite of alkaline volcanic rocks is Canada's largest occurrence of nephelinite and one of the few of this type of continental rift volcanic activity in North America.

*Geology:* Quaternary, East central Ellesmere Island
*Investigator:* W. Blake, Jr.,
Energy, Mines & Resources Canada

Ten ponds, frozen to the bottom, were cored. Four had been sampled on earlier visits. The longest core of frozen sediments recovered was approximately 6 m in length. Two lakes previously sampled were re-sampled using a modified Livingstone sampler. Four new lakes, the highest being approximately 650 m above sea level, were also sampled. Analysis of cores for age ($14_c$), pollen stratigraphy, diatoms, algae, and moss flora continues, and both a pollen diagram and a diatom diagram have been constructed for a lake at the head of Baird Inlet. The oldest age determinations obtained so far show the initiation of organic sedimentation as occurring about 9 000 years ago.

*Geology:* Quaternary, Banks and Victoria Islands
*Investigator:* J.-S. Vincent,
Energy, Mines & Resources Canada

On Victoria Island, the objective is to prepare a series of surficial geology maps to describe and explain the deposits, landforms, vegetation, ground ice and geological processes. This information will aid in implementing the territorial Land Use Regulations and be pertinent to engineering construction, particularly if the Polar Gas pipeline crosses the area.

The stratigraphy of deposits was established, and samples were collected for sedimentological, paleoecological and geochronological studies. Limits of ice advance during two distinct stades of the last or Wisconsin Glaciation were established, as was the Late Wisconsin-Holocene marine limit.

On Banks Island, the sediments in the Duck Hawk Bluffs, among the oldest preserved Quaternary deposits in Canada, were studied to establish lithostratigraphy of events following the deposition of the Miocene Beaufort Formation.

*Geology:* Sedimentation, Beaufort Sea
*Investigator:* K. Kranck, Fisheries and Oceans

A study of modern sedimentary processes in an area of high turbidity was carried out to observe what happens to the suspended sediment load of the Mackenzie River when it enters the Arctic Ocean. Total suspended sediment concentrations in the Mackenzie River were 38 to 46 mg/l. In the distributary channels of the Mackenzie Delta concentrations ranged from similar values down to 12 mg/l. In Shallow Bay and Kugmalit Bay, higher concentrations of 80-120 mg/l form a turbidity maximum between the Delta and the much lower concentrations of the offshore region (n 10-.5 mg/l).

*Geology:* Slope processes, Bathurst, Cornwallis and Melville Islands
*Investigator:* J.A. Heginbottom,
Energy, Mines & Resources Canada

The experimental sites established in 1977 were visited in June 1981; various observations were made and recorded. A large, apparently active, gelifluction apron on southeast Bathurst Island was examined. A trench was excavated into the nose of the apron and a buried organic layer was traced for some 4 m under the apron. Samples were collected and have been submitted for radiocarbon age determination.

*Geology:* Surficial, Bylot Island
*Investigator:* R.A. Klassen,
Energy, Mines & Resources Canada

A study of the glacial history of Bylot Island was continued. On at least two occasions, glacier ice from ice sheets centered outside the region, has crossed onto Bylot Island.

During the last major glaciation by foreign ice, ice attained elevations of 800 m above sea level, across the outer coasts of southern Bylot Island. Grounded glacier ice filled the channels around the Island completely including Lancaster Sound and extended far out toward the head of Baffin Bay. This last glaciation could be early Wisconsinan.

This work has important implications for paleoclimatology.

*Geophysics:* Electromagnetism, Tuktoyaktuk, N.W.T.
*Investigator:* D. Slaine, University of Waterloo

Investigation of two sanitary landfills on a permafrost environment was initiated to detect local ground water contamination. Contaminated ground water has a mugh higher conductivity than natural ground water due to increased levels of dissolved solids and chloride concentrations. The level of conductivity can be determined by electric and electromagnetic measurements.

*Geophysics:* Geomagnetism, Devon Island
*Investigator:* P.B. Robertson,
Energy, Mines & Resources Canada

A ground magnetic survey was caried out at the Haughton impact structure at roughly 5 km intervals, extending to 5 km beyond the outer rim of the 22 km diameter structure. The regional east-west magnetic trend is disturbed within the structure to a diameter of 14 km. A prominent positive anomaly overlies the centre of the basin, flanked to the north and south by negative anomalies. The central anomaly is interpreted as due to Precambrian gneisses and more mafic rocks which have been uplifted from roughly 1700 m possibly to within 200 m of the present surface, forming the central uplift of the complex impact structure.

*Geophysics:* Geothermal, Arctic Islands, Mackenzie Delta area
*Investigator:* A. Judge, Energy, Mines & Resources Canada

Temperature logging of abandoned or suspended oil and gas wells continued in the Mackenzie Delta and the Arctic Islands. Ten more holes were drilled to depths of 60 m at the "Illisarvik" drained lake site in the Mackenzie Delta. Shallow thermal gradiometer observations were continued in the Beaufort Sea Shelf to define zones of seasonal freezing of sea-bottom sediments and to outline the distribution of aggrading permafrost.

*Geophysics:* Paleomagnetism, Somerset, Cornwallis, Prince of Wales Islands, N.W.T.
*Investigator:* P. Lapointe,
Energy, Mines & Resources Canada

In Lower Devonian time, these islands were in a paleolatitude of about 07°, an equatorial climate. More important is the fact that since this time no movement has occurred between the three islands. Samples were collected from the Red River Canyon Formation in the Canyon Fiord area and from Carboniferous and Permian rocks in the Nansen Sound area.

*Geophysics:* Seismic, permafrost, Eastern Beaufort Sea, Mackenzie Delta
*Investigator:* J.A. Hunter,
Energy, Mines & Resources Canada

Sub-seabottom hydraulic jet drilling sites were selected to determine the temperature distribution of the sub-seabottom permafrost from near-shore to off-shore, to measure uphole seismic velocities and to log associated lithologies. Eight holes were drilled to refusal at an average depth of 35.69 m below bottom, and uphole seismic was done in five holes. Geophysical results indicated the occurrence of ice-bonded permafrost at seabottom. Temperature results suggest the development of an active layer in summer months due to the influence of Mackenzie River water.

The Canadian Coast Guard ship NAHIDIK was used to obtain geological information on the structure of near-surface sediments by geophysical methods. This work was done to aid in interpreting the Quaternary geological history of the southern Beaufort Sea. Results of the seismic survey are currently being incorporated into the Beaufort Sea Distribution of Permafrost map.

*Glaciology:* Melville, Meighen, Ellesmere and Kent Islands
*Investigator:* R.M. Koerner,
Energy, Mines & Resources Canada

Field work was concerned with ice cap mass balance, borehole remeasurements and snow sampling. The mass balances of the Meighen, Melville, Devon (northwest side) and Agassiz (northern Ellesmere) ice caps were remeasured. Meighen's balance for 1978-80 was -1 g $cm^{-2}$ $y^{-1}$, Melville's for 1974-80 was -5 g $cm^{-2}$ $y^{-1}$, and Devon's for 1979-80 was 6 g $cm^{-2}$ $y^{-1}$. In the northern Ellesmere borehores, drilled from surface to bedrock in 1977 and 1979, down-borehole photographs were taken, and closure rates, total vertical strain and temperatures were measured. Measurements were compared to those made each year since drilling. Core samples to a depth of 20 m in Agassiz ice cap and to 10 m near Mount Oxford—also in northern Ellesmere — were drilled to continue a study of acidity trends in High Arctic snow.

*Glaciology:* Axel Heiberg Island, N.W.T.
*Investigator:* A. Ohmura, E.T.H. Zurich

The longitudinal profile of the White Glacier temperature measurements was completed by drilling three holes to the base of the Glacier and measuring the in-glacier temperature. The stakes for mass balance measurement on the White Glacier were also reset in the hope that the longest mass balance record in the Canadian Arctic will be continual.

*Hydrography:* M'Clintock Channel
*Investigator:* P.V. Davies, Fisheries and Oceans

Beginning March 1, a total of 9971 spot soundings and about 1000 gravity readings were taken. A few check lines were run into the 1980 Decca chain coverage and more soundings taken to densify the grid. The work from both 1980 and 1981 was in complete agreement.

*Hydrography:* Sonar systems, Resolute
*Investigator:* J. Medendorp, Fisheries & Oceans

The Marine Arctic Route Reconnaissance Systems (MARRS) was developed to provide complete bottom coverage of echo soundings from one hole through the ice to a maximum range of 1 kilometre. The MARRS sonar system was field tested 6 kilometres west of Resolute. The tests involved drilling a hole through the ice and lowering the transducer array below the ice. The 1 degree "pencil beam" was scanned 90° vertically and 360° horizontally. The MARRS field test was successful because it answered a number of questions. However, the MARRS system did not perform according to specifications and did not meet operational requirements. No further development will take place on this system, although it does appear to have been based upon a sound concept.

*Hydrography:* Tides, Norwegian Bay, Barrow Strait, M'Clintock Channel
*Investigator:* B.J. Tait, Fisheries & Oceans

The Arctic Tidal Survey is a continuation of a multi-year project to carry out a comprehensive tidal survey for use in navigation and in the production of nautical charts. Five successful month-long tidal records were collected around Norwegian Bay in Jones Sound. The work consisted of eight month-long deployments in Peel Sound and two in Barrow Strait. After the month-long deployments were recovered, four gauges were re-deployed in Barrow Strait for retrieval in the spring of 1982.

*Hydrology:* Mould Bay, Resolute, Eureka
*Investigator:* M. Woo, McMaster University

Investigations ranged from site-specific studies of hydrologic processes to an extensive traverse of drainage basins carried out at various locations in the Queen Elizabeth Islands. Several related projects were undertaken to study the snow, ice and permafrost hydrology of small basins.

*Hydrology:* Mackenzie Delta
*Investigator:* S.C. Bigras, Environment Canada

A study was made to assess the potential impact of increased flow regulation of the Mackenzie River upon the Mackenzie Delta. Through the use of 16 mm time-lapse photography, it should be possible to assess the reservoir effect that the Mackenzie Delta lakes have on the inflow from the Mackenzie River. It should also be possible to determine whether or not the Delta region is a pulse-stabilizing system.

*Hydrology:* Mackenzie Delta Region
*Investigator:* J.C. Anderson, Environment Canada

The primary aim of the study along the route of the proposed Inuvik-Tuktoyaktuk highway has been to identify potential icing sites and to gather data that can be used in designing highway culverts and bridges. A notable occurrence in 1981 was the formation of a large river icing, at least five kilometres long, extending from Noell to Jimmy Lake. Ice thickness along this 60 m transect varied from 1.0 to 1.6 m.

*Oceanography:* Barrow Strait
*Investigator:* D.J. Brooks, Fisheries & Oceans

The general aim of this new project is to collect data on the magnitude of short- and long-term variations in the physical, chemical and biological properties of the water in Barrow Strait. A total of 81 CTD profile measurements were made for the regional survey of water structure within a network of 56 stations.

*Oceanography:* EUBEX, Eurasian Basin, Arctic Ocean
*Investigator:* E.L. Lewis, Fisheries & Oceans

An airborne CTD survey covering the area of the ice edge north of Spitsbergen to 85°30' North and from the Greenwich meridian to 32° East was carried out from Longyerbyen and the FRAM III ice camp. These measurements showed detailed features of the Atlantic water entering the Arctic Ocean and its cooling as it travels along the shelf break north of Spitsbergen. This current is the main inflow into the Arctic Ocean and affects the entire Basin.

*Oceanography:* Physical, Beaufort Sea
*Investigator:* H. Melling, Fisheries & Oceans

An observational program conducted in the Beaufort Sea during March included installing current meters, which were recovered the following August. Observations were made west of the U.S. border in co-operation with the U.S. Coast Guard. CTD sections were taken extending from the deep basin waters to the edge of the landfast ice over a 750 km stretch of coastline. Sixty CTD profiles were acquired. Measurements verified the presence of a westward current jet overlying the continental slope. Measurements also demonstrated the existence of a thermohalene front on the outer shelf marking the boundary between waters of the Canadian basin and a mass of saline water at its freezing point, originating from ice formation over the continental shelf.

*Oceanography:* Polynyas, Sverdrup Basin
*Investigator:* R. Lake, Fisheries & Oceans

Oceanographic measurements indicate a source of sensible heat in the form of warmer water brought to the surface during high current periods of the tidal cycle. The existence of the polynya depends on the balance between the oceanic heat source, the surface heat loss and mechanical removal of ice during periods of high current.

*Land Use Study:* Arctic Islands
*Investigator:* G. Ironside, Environment Canada

The Northern Land Use Information Series of maps, sponsored jointly by Environment Canada and Indian and Northern Affairs, was started in 1971. Its purpose was to provide a generalized spectrum of baseline information for evaluating proposed land uses in the Northwest Territories and the Yukon Territory. The land resource input is compiled in the context of an ecodistrict land classification. Most of the Arctic Islands and the remaining parts of Keewatin should be mapped by 1988. The 1981 study area included Bathurst Island, Prince of Wales Island, Melville Island and northern Victoria Island.

*Land Use Maps:* Viscount Melville Sound area
*Investigator:* G.G. McLean, Environment Canada

Land Use Information Series maps focused on the Viscount Melville Sound area. These maps combine a wide range of information on renewable and non-renewable resources, wildlife habitat, fish resources and fish harvesting. The maps provide data on the native use of land areas, land evaluation, coastal classification and biophysical interpretation, and cover a variety of other socio-economic and cultural topics.

*Meteorology:* Weather satellite, Arctic Islands
*Investigator:* S. Washkurak,
Energy, Mines & Resources Canada

Weather satellite reception at Resolute was more timely this season. Data were received from 05:00 to 07:00 a.m. Reception of TYRO data from ANIK and WESTAR was also tested. The primary application is to read out aviation weather data providing gross weather patterns in northern Arctic regions, including Alaska.

*National Parks*
*Surveys:* Northern Banks Island
*Investigator:* T.J. Kovacs, Environment Canada

The purpose of the survey was to check the consultants' recommendations for natural regions 37 and 38 and to establish a priority for Parks Canada on the selected Natural Areas of Canadian Significance.

The two NACS selections within region 38 were the Polar Bear Pass of Bathurst Island and the Bjorne Peninsula.

A Bylot Island/Eclipse Sound resource survey identified land and marine areas that may eventually be included in the park reserve.

*Remote*
*Sensing:* Permafrost, Tuktoyaktuk Peninsula
*Investigator:* D.D. Graham, Carleton University

Sampled active layer thickness and surface spectral signature data acquired from colour infrared aerial photographs were compared for five study sites. The thickest active layers are found in areas with strong near infrared reflectance where vegetation acts as a surrogate for gravel-rich substrate. The feasibility of using remote sensing to map active layer thickness was demonstrated.

*Remote*
*Sensing:* Radar satellite, Beaufort Sea
*Investigator:* R. Ramseier, Environment Canada

Studies were conducted on the response of microwave sensors to representative ice types. Studies on the structural and mechanical properties of sea ice were also carried out. Ice types included first-year columnar ice, first-year frazil ice, multi-year ice and shore-fast ice. The main emphasis of this work was to determine the microwave back-scatter cross-section of ice types to a range of frequencies between 4.6 and 17 $GH_Z$.

This study was in support of the Radar Satellite Program. Its purpose was to define the optimum radar parameters for identifying various ice types. Considerable ground truth data were collected for comparison with the remote sensing information.

P.C.S.P. support was also provided for:

- archaeological surveys of areas visited by the Franklin search expeditions;
- an archaeological survey at Rock River, Yukon;
- an excavation of a double winter house dating to the Thule stage on southeastern Banks Island;
- a study of sea birds in Hudson Strait;
- a final phase study of muskox behaviour;
- a study of the breeding biology of wading birds in east central Ellesmere Island;
- a survey to determine the number and distribution of Lesser Snow Geese nesting in the western Canadian Arctic;
- a collection and study of *Saxifraga oppositifolia*;
- a study on the population ecology and ecophysiology on two species of common Arctic vascular plants;
- a study of Silurian stratigraphy on Prince of Wales Island;
- visits to mining camps and mineral occurrences;
- a stratigraphic overview of Early Devonian reefs on Lowther Island;
- a study of modern analogues to interpret former permafrost environments on southern Banks Island;
- stream flow measurements in a basin near Resolute;
- a sampling program of modern lake sediments for pollen and macrofossil analysis in Tuk Peninsula;
- a high resolution radio echo sounding survey on Agassiz Ice Cap, Ellesmere Island;
- a lithofacies study of Silurian stratigraphy in the Baumann Fiord area, Ellesmere Island;
- an evaluation of Loran-C/Accufix systems for ship navigation in the Beaufort Sea;
- a month-long CTD profile recorded twice daily in Austin Channel;
- inspections of Land Use Operations in the high Arctic; and
- further testing of electrical resistance strain gauges in sea ice near Pond Inlet.

***Plans for 1982-83***

The 1982 Arctic field season will probably see more than 160 scientific parties in the field. All will be concentrating upon making their own contribution to scientific knowledge. Branch and departmental activity will be extensively directed to preparing for the Arctic Ocean geological/geophysical/oceanographic investigation scheduled for March-May 1983 and named CESAR'83 (Canadian Exploratory Survey of the Alpha Ridge).

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 13 217 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Economic Growth | 9 286 | 70.3 |
| Protection of the Environment | 2 163 | 16.4 |
| Sovereignty and Security | 1 474 | 11.1 |
| Administration | 245 | 1.8 |
| Social and Cultural Development | 40 | 0.3 |
| Quality of Life | 9 | 0.1 |

# Department of the Environment

## Atmospheric Environment Service

### *Responsibilities*

The Atmospheric Environment Service (AES) is the federal agency that provides services and information relating to weather, climate, ice and air quality. The Service's activities contribute to the safety of Canadians and the security of their property. The services include historical, current and future information on weather, climate, sea state and ice conditions for all areas of Canada and contiguous waters. Specifically, through its observation and communication networks and Arctic forecast systems, AES receives and processes surface observations and upper air information throughout the year, conducts ice reconnaissance missions and provides consultation on, and forecasts of, atmospheric, ice and sea conditions.

The Service is involved in northern development and exploration through its participation in the federal Environmental Assessment and Review Process (EARP). Because concern for environmental quality has been increasing in recent years, the AES has become more involved with air quality. For example, it has helped to develop national objectives for the quality of the ambient air. It has also carried out research, provided information about the environmental aspects of acid rain and toxic chemicals and has participated in international air-quality negotiations.

### *Review of 1981-82*

Much of the construction of the Eureka — Alert communications link was accomplished in 1981. Construction work on Project Hurricane started again in March 1982. A Canada/Denmark satellite receiving station located at Sondrestrom Fjord became operational. Interim improvements were made to the computer system at the Canadian Meteorological Centre.

An evaluation of AES' ice and marine weather services was conducted during 1981, and a draft report has been prepared. Plans to improve aviation services in the Arctic were completed by AES and the Department of Transport (DOT).

Additional funding to support extended ice information services in the North, including iceberg forecasting and winter ice reconnaissance services was requested.

The Canadian Forecast System Review began in November 1981. AES is investigating a forecast system for the North, particularly a year-round Arctic marine forecast service. The objective is to recommend improvements and new services to support the general activities and special projects in the North.

EUREKA
1/2 MI.

A view of the AES Weather Station located at Eureka, N.W.T. on the shore of Slidre Fjord at 80°N. All buildings are covered with aluminum sheet siding. The land is snow-free for about 2 months. All the ice has left the fjord. The station is resupplied every 3 weeks.

**_Plans for 1982-83_**

The Eureka — Alert communications link will be completed and in service by the fall of 1982. Subject to approval by the Treasury Board, improvements in aviation weather services and ice reconnaissance will be implemented and an iceberg surveillance service will be initiated. In 1982, senior management will be considering recommendations resulting from the evaluation study of ice and marine weather services and the Canadian Forecast System with a view to implementing them as soon as possible. Plans will be developed with the Department of Transport for improved services to Arctic marine transportation. A project will be carried out with the CBC's Northern Service to determine the feasibility of broadcasting an Arctic aviation weather presentation.

The Service will continue to improve its communications system. It will also be installing a new system at the Canadian Meteorological Centre for predicting the movement of oil spills. The computer system at the newly located Ice Central in Ottawa will be expanded, and a new "dynamic prediction model" delivered for testing. Planning for RADARSAT (a possible future satellite carrying radar equipment to observe ice) will continue.

A report entitled "The Long Range Transport of Air Pollutants" will be issued. AES will continue to provide consultation on and forecasting of weather, sea and ice conditions.

### *Administration Branch*

**_Review of 1981-82_**

During April 1981, AES carried out comprehensive health and safety inspections at the High Arctic Weather Stations. It also carried out on-site training sessions on health and safety. These sessions include training in the operation of fire fighting equipment. In September 1981, the sites were re-visited and inspected. The quality of drinking water was tested. All station facilities were surveyed for the presence of building materials containing asbestos. No hazardous materials were found.

**_Plans for 1982-83_**

In 1982, ultra-violet water purification units will be installed at some stations. Safety inspection visits to all High Arctic Weather Stations are scheduled for May and September 1982. Inspection visits are also being planned to other isolated weather stations in the central and western Arctic. Renovation projects being completed this summer under contract will be inspected before they are accepted.

### *Atmospheric Research Directorate*

**_Responsibilities_**

The Atmospheric Research Directorate (ARD) advances the knowledge and understanding of the atmosphere and its interfaces with land, water and living things, both animal and vegetable.

**_Review of 1981-82_**

Daily surface-based measurements of total atmospheric ozone continued at Resolute, N.W.T. using a Dobson ozone spectrophotometer. Once a week, a vertical ozone profile from the earth's surface to approximately 30 km altitude was obtained by using a Science Pump-ECC electrochemical balloon sonde.

The Canadian Arctic Air Pollution Program (CAAPP) of the Air Quality and Inter-Environmental Research Branch completed its third year of operation. The network stations at Alert, Mould Bay and Igloolik monitor aerosol samples for major ions such as sulphates and nitrates as well as for trace metals. Visible light scattering is also monitored by Integrating Nephelometers at Igloolik and Mould Bay. CAAPP is part of an international effort involving Canada, the United States, Norway, Denmark and Great Britain. Special studies of long-range transport of sulphur dioxide and sulphate to the Arctic were conducted in November 1981 and February 1982. Data from these studies give information on the size distribution of sulphate and trace metal particles, sulphur dioxide-to-sulphate ratios, and vertical profiles of Arctic haze. These studies will continue in a co-operative program with the University of Windsor.

Scientists in Meteorological Services Research Branch (MSRB) completed the Beaufort Sea Winter Ice Experiment. This was a joint industry-federal government research activity which resulted in the development of ice forecast models and the collection and processing of ice and meteorological and oceanographic data used to test the models. MSRB also acquired an ice database system and implemented the prototype ice forecast system in order to carry out an operational evaluation of the forecast models.

A simplified oil spills prediction system was delivered to most AES regional Weather Centres, and development work on a complete system was started. Work also began on the problems of forecasting the movement of oil spills in the presence of sea ice.

Procedures for predicting weather empirically were developed and tests were carried out at a few northern locations. A database system and a limited data set were developed for extending empirical weather predictions to Arctic marine locations.

**_Plans for 1982-83_**

Air quality monitoring at Mould Bay, Alert and Igloolik will continue as the major CAAPP project. CAAPP will be reviewed at the end of 1982-83 to determine if the number of stations in the network should be changed.

The ice prediction models and associated systems will undergo an operational evaluation at Ice Forecast Central, and sensitivity tests and tuning of the models will be carried out in MSRB.

A comprehensive real-time system for predicting the paths of oil spills will be installed on AES computer facilities. A freezing spray prediction procedure will be adapted for Arctic marine applications.

### *Canadian Climate Centre*

**_Responsibilities_**

The CCC provides an effective climatic service directed toward developing the ability to understand and predict the inter-relationships between climate and man's activities.

The CCC is the lead agency for the Canadian Climate Program, a national program to co-ordinate climate-related activities in Canada.

***Review of 1981-82***

The effects of increasing levels of Carbon dioxide in the atmosphere on the Arctic climate was addressed through a project utilizing climatic analogs. This project involved choosing previous periods of climatic history that were markedly warmer or cooler than our current climate. These periods are looked at in relation to today's patterns to estimate Arctic conditions that might be expected if the amount of $CO_2$ in the atmosphere were to double by the mid-21st century. In connection with this project, the literature review of Arctic climate variation/change continued.

A climatology of cyclonic and anticylonic centre movements in the Canadian Arctic and eastern coastal zones was begun. Trajectories and percentage frequencies of occurrence were among the elements being considered. To date, the study has been restricted to the months of January and July during the period 1957-78.

Work on Regional climatologies continued as CCC worked to complete the Yukon Climatology begun at the Whitehorse Weather Office. This work will complement that done on the previous regional climatologies on the Mackenzie Valley— Beaufort Sea and the Canadian Arctic Islands and adjacent waters. With respect to the latter, extensive typesetting and drafting was done on Volume 2, which will be published in 1982.

Offshore climatologies continued to be a key area of interest. The Centre acquired data bases composed of ship observations and of spectral wave data covering all Canadian waters. Software to enable climatological statistics to be generated from these data for user-specified areas and time periods was being developed. Duration statistics for winds and waves in the Lancaster Sound-Northwestern Baffin Bay area were prepared.

The program of acquiring meteorological data collected at summer field camps supported by the Polar Continental Shelf Project continued. A data base covering the 1972-80 period is now available for study.

As it has in previous years, the Centre devoted a significant amount of time to evaluating various documents submitted under the Environmental Assessment and Review Process (EARP).

***Plans for 1982-83***

The Centre will finalize the report on the carbon dioxide study and will prepare plans to carry out further work. The literature review of Arctic climate variation/change will be completed. A draft version of the "Climate of the Yukon" will be prepared.

The cyclone/anticyclone climatology project will continue by testing the usefulness of an alternative objective data set for generating the desired statistics.

An assessment of the usefulness of the summer field camp data from the Canadian Arctic Islands and comparison of them with existing AES network data and other offshore observations will be made.

The software for analyzing offshore climate statistics will be used to prepare a set of basic weather contingency tables for Arctic waters. Work on testing synthetic offshore data sets will continue. This work will draw on the results of the Lancaster Sound-Northwestern Baffin Bay study. The Centre will be working on a project, in conjunction with AES Western Region, to update existing climatologies for the Beaufort Sea area. A survey of available offshore data will be carried out with a view to developing a catalog of this information.

### *Central Services Directorate*

***Responsibilities***

Through its Ice Branch, the Central Services Directorate (CSD) provides ice information to support transport and resource exploration needs in the Arctic. It also provides computing services and technical and professional training, maintains data acquisition networks and provides expertise for developing and using atmospheric instruments and systems.

***Review of 1981-82***

The Directorate finished installing the ADRES systems at all Upper Air Stations. New hydrogen generators (7-cell electrolysers) were ordered. Two FGGE-type Hermes drifting buoys were deployed in July 1981 in Hudson Bay. Both performed well and produced useful information for areas in which data were sparse. The Data Acquisition Services Branch procured an Automatic Picture Transmission (APT) satellite receiver for Whitehorse. The Training Branch provided formal weather observing courses for staff assigned to the DEW Line and AES Weather Stations in the Arctic, Courses were held at training centres in Cornwall, Ontario and Colorado Springs. The Branch worked with the N.W.T. Government training staff during the year on training Observer-Communications for the Community Airports Program.

The Ice Branch provided somewhat more ice information services than it had in previous years. In October 1981, a "ground-truthing" experiment relating to the microwave signatures of ice was successfully completed at Mould Bay by AES' Ice Research Division. Scientists from NASA, the University of Kansas and the Jet Propulsion Laboratory and two Inuit from Pont Inlet assisted. Many of the activities of the project were filmed.

The flight testing of an improved laser profilometer was conducted in southern Canada during the summer of 1981. Its operational use in early 1982 in the Arctic was not particularly successful; several problems remain to be solved. Implementation of the new WMO International ice symbology was deferred because of pressure from marine operators; it will be introduced in early summer of 1982. Appropriate numerical spot codes have been developed for ice reports from icebreakers and other offshore Data Collection Platforms (DCP's).

Because ice cleared early in the Labrador Sea — Hudson Bay areas in 1981, increased winter flying was undertaken in the Arctic to gather more baseline data. Rather than carrying out a single series of flights in February, the Branch conducted monthly probes in January, February and March 1982.

***Plans for 1982-83***

A second Mould Bay experiment (under melting conditions) is planned for mid-June 1982, and attempts are being made to develop a permanent research facility at that location which could be used by other government departments.

The Directorate is working on a new aircraft charter contract for aerial ice reconnaissance and has submitted proposals for a major expansion of the program into iceberg and year-round Arctic ice reconnaissance.

Training support services for all weather-observing programs in the North will be provided at the same level as they were in 1981.

An AES Upper Air Meteorological Technician, holding a radiosonde balloon and the instrument package, on the point of releasing the balloon to carry the radiosonde aloft, measuring humidity and temperature, and providing by means of radar tracking - winds.

The drifting buoy program in Hudson Bay will be repeated. Additional APT receivers will be procured for installation in Frobisher Bay, Resolute, Yellowknife and Inuvik, N.W.T. New Hydrogen generators and safety systems will be installed at several stations. Work will continue on developing and evaluating the next generation of automatic weather stations capable of operating in the Arctic under the most severe winter conditions. The Directorate will manage a contract to design an anemometer suitable for use in the Arctic.

*Field Services Directorate*

***Responsibilities***

The Field Services Directorate (FSD) provides up-to-date information, forecasts and warnings to most of the larger northern communities. The Directorate operates five data-gathering networks, a rapid communications system, contract stations, the Canadian Meteorological Centre, the Yukon Weather Office, and the Arctic Weather Centre (responsible for issuing weather forecasts and warnings), weather service offices, satellite read-out stations, and scientific support offices.

***Review of 1981-82***

Meteorological information, forecasts and consultation services were provided for a variety of programs and activities in the North. The Arctic Weather Centre in Edmonton, the Yukon Weather Office in Whitehorse and the Weather Offices at Yellowknife, Inuvik, Resolute and Frobisher Bay continued to provide weather services for northern residents and those involved in air and marine transportation. A technician assigned to the Fire Control Centre in Fort Smith and a meteorologist in Whitehorse provided fire-related weather services. The Beaufort Weather and Ice Office provided on-site specialized consultation and services involving forecasts of weather, ice and sea conditions. These services were provided to Dome, Esso and Gulf and were related to their oil and gas exploration activities in the Beaufort Sea.

An APT satellite receiving station was installed at Whitehorse in March 1982. The station provides cloud imagery to the Yukon Weather Office to help meteorologists to analyze and forecast weather in that region. A Hewlett-Packard computing system was installed in the Whitehorse Weather Office, and renovations to the office were completed.

AES staff from the Frobisher Bay Weather Office broadcast a daily public weather forecast prepared by the Quebec Weather Centre. The Forecast was transmitted over the Radio-Canada network to residents in the northern portion of Quebec. The Service also inaugurated aviation weather services provided by staff at the Frobisher Bay Weather Office in support of regular flights (3 per week) by First Air and Groenlandair between Frobisher Bay and Godthaab, Greenland.

The technological highlight of the year in the eastern Arctic was a major improvement in communications. It involved installing an antenna to allow two-way communications via the ANIK-B satellite between the Frobisher Bay Weather Office and the Canadian Meteorological Centre (CMC) in Dorval and the Ice Forecasting Centre in Ottawa. Between May and September 1982, the Frobisher Bay Weather Office will be able to receive facsimile weather charts from the CMC, and to transmit ice information obtained from airborne ice reconnaissance teams to the Ice Forecasting Centre, as required.

Meteorological data were acquired from 49 synoptic stations and six automatic stations. Data were also provided from 14 aerological stations. In order to increase the height attained by radiosondes, special upper air balloons were supplied to aerological stations in the winter of 1981-82 in the North. An additional 93 climatological stations provided extreme daily temperatures, precipitation and other weather information.

Reports were obtained from seven ships during the navigation season. Three more Arctic Aviation Weather Reporting Stations (AAWRS) were commissioned in 1981 at Broughton Island, Sachs Harbour and Fort Good Hope, N.W.T. There are now 22 AAWRS operating in the Yukon and Northwest Territories — 7 in the eastern Arctic, 9 in the western Arctic, and 6 in the central Arctic. Contracts to operate the meteorological programs and AAWRS were re-negotiated with the local Inuit co-operatives at Pond Inlet and Cape Dorset for two-year periods. AES carried out a routine equipment inspection program and trained Inuit meteorological observers on-site. Two Private Aviation Weather Reporting Stations (PAWRS) are now operating at Nanisivik and Rae Point.

In June 1981, an automatic weather station was commissioned at Lupin, N.W.T., at the site of a gold mine operated by Echo Bay Mines. A new contract with Echo Bay Mines was negotiated for a manned, partial weather observing program at Lupin, after the weather observing contract that the Department of Transport had with Pacific Western Airlines at Contwoyto Lake was terminated in March of 1982.

Meteorological data transmitted from Data Collection Platforms (DCP's) via NOAA polar orbiting satellites were decoded by the Satellite Facility in Edmonton. Drifting DCP's located in the Arctic Ocean, Hudson Bay and the Labrador Sea provided atmospheric pressure data which were transmitted to AES communications circuits. In addition, data from fixed platforms located in Greenland were decoded for use in the Arctic Weather Centre. Western Region participated with DND and the Polar Science Centre in Seattle in the deployment of a DCP in the southern Beaufort Sea. Together with NOAA and various research and operational groups, Western Region is planning an ongoing DCP program for the Arctic Basin.

On April 1, 1981 the weather-observing programs at Eureka and Mould Bay were up-graded to provide 24 hourly reports each day, including special reports between 1100 Z[1] and 2100 Z[1].

The Gill low-pressure hydrogen generators have now been phased out. Two new power generators were installed at Eureka in 1981. They are equipped with a heat recovery system that provides heat to the main garage, sleeping quarters and the operations building. A salt water de-salination plant was also installed to process about 2 500 gallons of water per day. An environmentally-controlled ADRES computer office was constructed at Resolute in January 1982. A new satellite communications facility is under construction in Northern Ellesmere Island.

The Department of Transport and AES have requested funds to provide additional facilities and services identified in the Arctic Aviation Weather Service Requirements Study.

Project CENTAUR, a joint scientific study of the upper atmosphere involving scientific agencies in Canda and the United States was carried out in the winter of 1981-82 in the western High Arctic. AES provided support facilities and lodging, as well as weather information and forecasts for this project.

Western Region's Scientific Services, Data Acquisition and Forecast Operations Divisions supported the Baffin Island Oil Spill experiments at Cape Hatt during the summer of 1981.

Regional Scientific Services Divisions, staffed with meteorologists specializing in applied meteorology, provided consultative services (e.g., advice to a contractor constructing a snow road on Melville Island). It carried out applied research (e.g., trajectory analysis for LRTAP) and, through the Regional Screening and Co-ordinating Committee, assessed the environmental effects of new developments (e.g., the Borealis Mine).

Services included co-ordinating pool housing for approximately 70 employees, providing advice and guidance to employees relocating, procuring goods for northern shipments, maintaining major AES facilities, co-ordinating safety programs, maintaining financial systems for costing special services and collecting revenue.

The Canadian Meteorological Centre supported weather service to the North with a wide range of meteorological charts and messages. It depicted main weather systems on a hemisphericcontinental scale as far as five days in advance. It also predicted various weather elements for use by the Arctic Weather Centre and other forecast offices in providing information of interest to air and marine transportation activities and the general public. A selection of 12-15 charts sent daily to offices at Frobisher Bay and Resolute by ANIK satellite was available directly to ships operating in Arctic waters.

Sea-ice prediction for Arctic navigation and oil exploration was given additional support through 15-day mean wind forecasts for use by the Ice Forecasting Centre in Ottawa. Provision was made in 1981 for on-request 48-hour forecasts of surface weather, pressure, wind, temperature and cloud cover for all reporting stations and pre-selected locations in the Arctic Basin and Hudson Bay.

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[1] Z = Greenwich Mean Time

***Plans for 1982-83***

In the summer of 1982, a power-house will be constructed at Mould Bay and the three power plants will be connected to a heat recovery system linking the sleeping quarters, main garage, operations building, and food warehouse. Environmentally-controlled ADRES computer offices will be constructed at Hall Beach, Eureka, Baker Lake and Mould Bay in 1982.

The aerological station at Norman Wells was to have been re-located and re-constructed in 1981-82. However, the Government of the N.W.T. included the proposed site in plans for the Town's expansion. Negotiations with the Government resulted in the selection of another site. Accordingly, the new aerological facility will be built in 1982-83.

Approval was received to construct a new facility for inflating hydrogen balloons at the Upper Air Station at Sachs Harbour on Banks Island, and construction is scheduled to begin in 1982. Three new AAWRS will be installed and commissioned in 1982-83 in the western Arctic.

The AES Weather Station at Pond Inlet will be re-located at the airport in 1982 because the land it now occupies is needed for housing. Quebec Region is continuing to monitor DOT plans for a new air terminal building in Frobisher Bay scheduled for construction in 1984-85, with the intention of moving the Weather Office to the new facility.

It is anticipated that the future status of Fort Reliance will be resolved in 1982. Project CENTAUR will enter its final phase in the winter of 1982-83.

Western Region intends to review the Arctic, Public, Marine and Aviation Weather Services Programs, with particular emphasis on the usefulness and distribution of weather information. The Region's Scientific Services Division will issue a report on the 1981 Baffin Island Oil Spill experiments, and will begin to review environmental impact statements (EIS) relating to Beaufort Sea development.

In 1982, the CMC will increase the number of northern stations from 8 to 25, for which maximum-minimum temperature forecasts are routinely provided to the fifth day. Experiments are to be started in 1982 to use satellite imagery in digital form as the basis for more accurate analysis procedures. A new-generation vector computer planned for late 1983 will result in more reliable data on which to base weather forecasts.

FSD will continue to provide up-to-date weather information, forecasts and warnings, scientific consultation on Arctic projects and climatological information for northern activities. Instruments, networks and communications systems will be inspected and maintained regularly. Special support programs for offshore activities will be provided.

### *Scientific Programs Co-ordinator*

***Review of 1981-82***

The Scientific Programs Coordination office was involved with the review of the Beaufort Sea EIS Guidelines, the formulation of the initial meteorological input to the Indian and Northern Affairs Canada (INAC) Northern Hydrocarbon Paper and the DOE Northern Policy Paper, and the review of the annual Beaufort Sea drilling operations. In addition, the office was active in discussions of northern issues with INAC, and helped to develop programs with several agencies leading to the funding of northern-related research and operations in AES.

***Plans for 1982-83***

Projects include reviewing the draft Green Paper on Lancaster Sound and the Beaufort Sea Hydrocarbon Development EIS. The office will continue to be involved in discussions with INAC on developments in the North and in the analysis of the results of the study of northern hydrocarbon transportation options.

## Environmental Protection Service

***Responsibilities***

EPS ensures that the federal government's environmental protection regulations are enforced. The Service is concerned with controlling air and water pollution, managing the disposal of waste, assessing and controlling the environmental impact of pollutants and handling environmental emergencies. This Service provides the departmental liaison with industry and provincial environmental protection agencies. In the North, the Service operates through district offices in Whitehorse and Yellowknife.

### *Air Pollution Control Directorate*

***Responsibilities***

Under the terms of the Clean Air Act, the Directorate monitors and controls air pollution in the two territories.

***Review 1981-82***

In the Yukon Territory, analysis for carbon monoxide and oxides of nitrogen continued on a seasonal basis. Levels of carbon dioxide exceeded maximum desirable levels on several days of extreme cold at the Whitehorse NAPS station.

Monitoring of stocks of unleaded gasoline for compliance with the Lead Free Gasoline Regulations was carried out at Yukon retail outlets. No severe cases of lead contamination were noted.

An air-sampling program in Riverdale, a Whitehorse suburb, continued. Here, many homes burn wood as an auxiliary or primary fuel. The air-sampling program is carried out to measure the amount of solid (particulate) matter and unburned hydrocarbons released into the air from wood-burning stoves and furnaces. Preliminary results indicate that under certain meterorological conditions, particulates will exceed 100 micrograms per cubic meter, approaching maximum desirable levels. Concentrations of polyaromatic hydrocarbons (PAH) are also high, indicating that unrestricted use of wood for fuel may lead to a substantial reduction in air quality.

Test and Tune, a vehicle emissions testing program, developed by APCD, was conducted in Whitehorse during the months of June, July, August and September 1981. It was a joint program of EPS, EMR and the Government of Yukon. Approximately 25 per cent of the vehicles in Whitehorse were tested. Results from this program should be released by mid-1982.

In the N.W.T., one NAPS and two high volume stations operated continuously in Yellowknife. Thirteen dustfall sampling stations for arsenic operated as recommended by the Canadian Public Health Association Task Force. Compared to the 1975 data, there has been a 60 per cent reduction in the quantity of arsenic emitted from mining operations in the Yellowknife area. The Service completed a "Fugitive Emission" survey of arsenic storage ponds at Con Mine and the report should be available by April 1982. It also started a program to monitor the ambient air quality at Norman Wells. This program will continue for the next two years in response to the Norman Wells expansion.

Stack sampling at Giant Yellowknife Mine was carried out. Tests indicated that the mine was complying with proposed new regulations for arsenic gold roasting under the Clean Air Act.

A report entitled "Arsenic Levels Around Yellowknife, N.W.T. since 1978" was completed.

Monitoring of unleaded fuel for lead contamination was carried out in Yellowknife and Hay River.

***Plans for 1982-83***

The Service hopes to install a fine particulates sampler in Whitehorse in conjunction with the NAPS instruments, to measure hydrocarbon concentrations.

In addition, analysis of the 1981-82 Riverdale woodsmoke sampling will be completed and the results will be released to the public.

The NAPS and dustfall sampling stations will continue to operate in Yellowknife, as will the ambient air quality monitoring program at Norman Wells.

Stack sampling for compliance with arsenic gold roasting regulations will again be conducted at Giant Mine as well as sulfur dioxide emissions as requested by the N.W.T. Science Advisory Board.

The Service will assess Con Mine's Arsenic Trioxide plant to determine the extent to which it meets the requirements of the Clean Air Act. Assessments of air emissions and controls of any new mines in the N.W.T. will be carried out if required. Sampling for leaded and unleaded gasoline will again be conducted in both Territories.

**Water Pollution Control Directorate**

***Responsibilities***

Water Pollution Control, with the Department of Indian Affairs and Northern Development and the two Territorial water boards, is responsible for developing and implementing adequate water pollution control programs in the North, particularly for the mining and petroleum industries. EPS implements the provisions of the Ocean Dumping Control Act, and other water pollution abatement programs under the authority of Sect. 33 of the Fisheries Act. It stimulates the development and application of water pollution control techniques as they relate to the North.

***Review 1981-82***

EPS Yukon continued to work closely with DIAND staff on Yukon Territory Water Board matters, especially the application for an amendment to the licence for Cyprus Anvil Mining Corporation's new tailings facility. Representatives of EPS attended Municipal Technical Committee meetings to help draft standards for effluents from Yukon municipalities and to monitor effluent quality.

EPS Yukon completed studies for publication, on Whitehorse municipal effluents and water quality in the Yukon River. It developed benthic invertebrate monitoring programs to be included as conditions of water licences, and conducted pre-development environmental assessment studies at LaForma, Silver Tusk, Marbaco, Tom, Jason and Jona Silver mining properties.

EPS Yukon also carried out studies of the environmental impact of mineral exploration and mine abandonment. It also provided technical assistance to a multi-disciplinary interdepartmental study team assessing the impact of placer mining on the environment. As part of the study team, EPS helped to prepare a joint DOE/DFO position paper on placer mining. The paper was forwarded to DIAND in order to help that Department develop a new management regime.

Finally, EPS Yukon participated in the Yukon River Basin Study planning program and served on the Water Quality Working Group.

In Yellowknife, EPS initiated a comparative sampling program in order to establish standard methods of sampling under the Ocean Dumping Control Act. The Regional Ocean Dumping Advisory Committee met several times, consulted with members of the community and subsequently issued five ocean-dumping permits.

A biological and chemical survey in Yellowknife Bay was carried out. Its purpose was to provide a statistical basis for assessing the effectiveness of the new effluent treatment plant at Giant Yellowknife Mine. Preliminary biological and chemical surveys were carried out at the Cadillac and Lupin mines. These surveys were part of a co-operative program with the mines and DIAND to establish a baseline for future impact studies. Sampling of sediments and water was carried out at Colville Lake in response to a reported use of Lindane pesticide in the watershed of the community water supply. Sampling of well water in Enterprise was carried out in response to complaints of fuel tainting.

Five investigations under the Fisheries Act were conducted during the year. Although no prosecutions have resulted, discussions are continuing concerning potential enforcement actions on two of the cases.

Several Departmental briefs were presented at N.W.T. Water Board hearings for water licences for industrial and municipal uses. EPS helped to develop the conditions for 14 water licences granted during the year. EPS also chaired a working group that produced a set of guidelines covering effluents from municipalities.

***Plans for 82-83***

EPS will continue to provide technical advice and assistance to the Territorial Governments, with the emphasis on applying appropriate wastewater technologies. Advisory and contract management services for controlling water pollution control and setting sanitation standards for work camps as well as permanent facilities, will be offered to the operating departments in the North. Further support will be given to the Department's role in the North by providing environmental engineering solutions to problems arising from northern resource extraction and development activities.

EPS Yukon will begin field and laboratory studies on the acid-generating potential of high-sulphide mine tailings from five Yukon mines. It will also begin to study the toxicity and bacterial quality of five municipal sewage lagoons. Additional fieldwork will include a reconnaisance study of groundwater near abandoned waste disposal sites as well as pre-development assessment studies at proposed Yukon mine sites.

The office will continue to advise DIAND on placer mining and will conduct biological and water quality monitoring on some Yukon placer streams. It will also continue to participate in the Yukon River Basin Study.

In the N.W.T., EPS studies at two abandoned uranium mines are planned to determine the levels of radionuclides in water, sediments and fish. Work will continue at Cadillac Mine to provide a data base that will enable the effects of the mine to be assessed in future. Further sampling will be conducted in Yellowknife Bay to assess the need for future controls on the Con and Giant mines. Samples will be collected from Gordon Lake and Camlaren Mine to check for changes in baseline conditions measured in 1980. Further studies will be conducted at Lupin Mine and sampling will begin at Cullaton Lake Gold Mine and Salmita Mine to acquire a data base for assessing how the effluents from these mines will affect the environment.

A study to characterize and assess the extent of hydrocarbon contamination in McKinley Bay will be conducted. A survey of the area affected by the Edgar Jourdain fuel spill will be carried out to determine where contamination is most serious. Monitoring of shorebase facilities in Tuk Harbour, Tuff Point, McKinley Bay and Hutchison Bay will be started to assess the effectiveness of regulatory controls on these facilities.

Funding from the Ocean Dumping Research Fund will allow an investigation of foam block incineration. DIAND, Panarctic and CIL will participate in the study, with EPS playing a co-ordinative role. Sampling to determine the existing levels of contaminants in sediments along the Tuktoyaktuk Peninsula will be conducted.

EPS will continue to administer the Ocean Dumping Control Act and to co-ordinate the Regional Ocean Dumping Advisory Committee. Through membership on the Technical Advisory Committee to the N.W.T. Water Board, it will also provide technical advice on licences issued under the Northern Inland Waters Act.

## Federal Activities

***Responsibilities***

The Environmental Protection Service ensures that sources of pollution at federal facilities are cleaned up and that new projects are environmentally acceptable. Pollution problems are identified and assessed and clean-ups developed in consultation with other federal departments. The annual clean-up program continues to record and evaluate pollution problems generated by federal departments. Environmental effects of new projects are assessed through a screening process.

In addition to carrying out work to minimize pollution at federal facilities, the Federal Activities Assessment Program advises on the environmental effects of activities falling under federal jurisdiction. It provides specific advice as well as indirect advice through guidelines and codes of good practice. In addition, EPS co-ordinates interdisciplinary reviews to assess the effects of federal activities on the environment. These reviews enable EPS to provide advice and assistance and recommend appropriate courses of action for governments, senior management and industry. The Program also implements the EPS role in the policy statement "DOE Role in EARP".[1]

***Review 1981-82***

EPS Yukon published guidelines covering the disposal of drilling mud fluids in non-permafrost areas and sent them to holders of Yukon oil and gas lands permits. EPS offices in the Territories continued to participate in the Land Use Advisory Committee of DIAND in support of the Territorial Lands Act. It provided support to DOE representation on the Regional Environmental Environmental Review Committee recently set up by DIAND and participated in the DOE response to the Beaufort Sea EARP Reviews.

The Northwest Territories office participated in the Arctic Waters Advisory Committee (AWAC) review of environmental operating conditions for Beaufort Sea exploration. It also inspected operations in that area and carried out a sampling program for monitoring purposes at McKinley Bay.

EPS prepared a development forecast of major industrial projects planned for the N.W.T. A Paper was prepared jointly with the N.W.T. Wildlife Service dealing with the effects of development on the Nahanni watershed and the need for land use planning.

A sub-district office was opened during the summer months in Frobisher Bay. Most of the work carried out there was directed toward developing an "inventory" of PCB contaminants in northern waters and line inspections in the eastern Arctic.

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[1] Environmental Assessment and Review Panel.

***Plans for 1982-83***
EPS Headquarters will continue to examine development activities such as the Beaufort Sea and offshore Atlantic exploration efforts to determine how these developments affect the environment. Headquarters will also co-ordinate EPSHQ reviews of IEE's and environmental impact statements (EIS) and provide technical comment to the EPS regional review team for northern projects referred to the Federal Environmental Assessment and Review office (FEARO).

EPS will develop methods of controlling the adverse environmental effects of offshore oil and gas activities in the North. It will also develop techniques for controlling soil erosion around pipelines and roads constructed in permafrost.

EPS headquarters will represent and support EPS/DOE on interdepartmental committees that deal with assessing environmental impacts of development.

The "Offshore Situation Report" will be maintained as an information service on activities in the Beaufort Sea, Davis Strait and the Labrador Sea.

Both northern offices will be very much involved in the DOE Review of the Beaufort Sea EIS (Environmental Impact Statement) and will continue to participate on committees reviewing federally initiated projects to support the departmental policy statement "DOE Role in EARP". A forecast of major resource/industrial developments in the N.W.T. will be prepared.

EPS Yukon will review submissions by Foothills Pipelines Ltd. to the EARP Panel for the Alaska Pipeline and plans for a new Airport at Whitehorse.

A permanent EPS sub-district office will be established in Frobisher Bay to provide service to the eastern Arctic and a seasonal sub-district office will be established in Tuktoyaktuk to provide service to the Beaufort Sea area.

### Waste Management

***Responsibilities***
EPS ensures that federal government activities incorporate adequate waste management procedures. New techniques for managing waste are being developed and information on them is being distributed.

***Review 1981-82***
EPS Yukon continued its discussions with the Yukon Government on the need for quasi-provincial policies and legislation.

A groundwater study of the War Eagle municipal landfill site was initiated after EPS had sampled surface waters in the vicinity. The study's purpose was to determine if the site could continue to be used for waste disposal.

Waste handling facilities at DEW Line Sites in the eastern Arctic were inspected to assess the USAF DEW Line Environmental Clean-up project. A contract was awarded to a private company to carry out a study on waste management for the N.W.T. Government.

***Plans for 1982-83***
EPS Yukon will sample several old waste disposal sites to test for the presence of persistent contaminants such as DDT and PCB's.

The Yukon office will continue to attend meetings of the Solid Waste Committee of the Land Use Advisory Committee, and assist in the inventory, inspection and assessment of Yukon waste disposal sites.

Industry's ability to manage its solid waste in the Beaufort Sea area will be assessed by the EPS-N.W.T. office. As well, the office will compile an inventory of abandoned waste facilities, to determine where potential hazards exist.

### Contaminants Control

***Review 1981-82***
EPS Yukon chaired an intergovernmental advisory committee on pesticide programs in the Yukon and also provided technical advice to the Territorial Government on its draft pesticide legislation.

The EPS office in the Northwest Territories conducted PCB[1] inspections at eastern Arctic DEW Line stations, electrical transformers at the Frobisher Bay dump and the Cadillac Mine PCB spill.

***Plans for 1982-83***
In addition to overseeing pesticide management in the Yukon, the use and abandonment of PCB electrical equipment containing PCB at gold dredging sites in the Klondike will be surveyed by sampling soils and sediments in these areas. The past and present use of mercury in placer mining in the Yukon will also be surveyed.

EPS — N.W.T. will continue to develop an inventory of equipment containing PCB's. Advice will be distributed to those who use this equipment on its disposal.

### Environmental Emergencies

***Review 1981-82***
EPS Yukon received a total of 26 Pollution Reports, most of which involved petroleum products leaking either from storage tanks or during transportation. Commercial bulk petroleum storage and distribution facilities throughout the Yukon were inspected in co-operation with the Fire Marshall's office. The inspection found deficiencies in storage tanks and equipment and in operational procedures at these sites. Recommendations were made for upgrading the bulk plants to comply with both the YTG, Gasoline Handling Ordinance and sound environmental practices.

The Yukon Disaster Committee Contingency Plan to Deal With Oil and Hazardous Chemical Spills underwent major revisions this year. Draft contingency plans submitted by Foothills and Northern Canada Power Commission were also reviewed.

Plans were made to present a Yukon Environmental Emergency Response Course for the benefit of other government departments (federal and territorial) participating in the reporting, surveillance and monitoring system currently established in the Yukon.

Both offices actively participated in the Baffin Island Oil Spills Program at Cape Hatt this year and continued their participation in the Arctic Marine Oil Spills Program.

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[1] Polychlorinated biphenyls.

In the N.W.T., a total of 95 spills were reported. Major spills investigated were at Camp Farewell in the MacKenzie Delta, Cadillac Mine, Hall Beach (Edgar Jourdain), Tuktoyaktuk Harbour, Camlaren Mine, Hay River Harbour and Yellowknife. The Edgar Jourdain spill at Hall Beach was given the highest priority. Further inspections of fuel handling facilities in Hay River Harbour were carried out, and a sediment sampling program in Hay River was completed for detecting hydrocarbons.

A review of a draft of "Northern Dyking Guidelines" was initiated with other agencies.

***Plans for 1982-83***

EPS will sponsor the Yukon Environmental Response Course early in the year and the bulk plant inspections carried out last year will be followed up in 1982-83 to determine if bulk plants have responded to the recommendations made by EPS.

A study on the suitability of existing community waste disposal sites for accepting debris from oil spills will be initiated in the Yukon. EPS will continue responding to reports of spills.

Contingency planning will remain a high priority with EPS Yukon with plans to review several industry plans and updates to the Yukon Development Corporation plan.

In the Northwest Territories, EPS is prepared to respond to major environmental emergencies. An EPS response kit is being prepared to enable the collection of legal samples, the monitoring of spills and the detection of hazardous materials.

Northern dyking guidelines will be completed in collaboration with the Territorial Government.

## Inland Waters Directorate

### *National Hydrology Research Institute*

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

### Ground Water Division

***Responsibilities***

The Ground Water Division's research programs emphasize the development of techniques for assessing ground water resources. The effects of environmental disturbances on ground water are also studied.

***Review 1981-82***

The Division prepared a report entitled "Management of Ground Water Discharge for the Solution of Icing Problems in the Yukon". It was presented at the Fourth Canadian Permafrost Conference and will be published in the proceedings of the conference, The R.J.E. Brown Memorial Volume. The Report describes observations during the 1979-80 winter at an icing site at km 1817.5 on the Alaska Highway and suggests methods of alleviating problems at this and similar sites.

Analyses for oxygen and sulfur isotopes were carried out on a number of rock and water samples collected during the period 1975 to 1978 in the Central Mackenzie Valley.

The report on "Frost blisters of the Bear Rock spring area near Fort Norman, N.W.T." was completed and submitted for publication in Arctic.

In March 1981, samples of spring water, icing ice and average snowpack were collected at four instrumented icing sites along the Alaska Highway; ice-level markers were installed at the icing site at km 1817.5. Samples of spring water and average snowpack were also collected at Takhini Hot Spring and at a frost-blister site in the North Fork Pass.

In July 1981, the eight time-lapse cameras installed along the Alaska Highway were retrieved and their exposed films processed; at km 1817.5 the ice-level markers were surveyed and several tree samples were collected for dendromorphology study to try to "date" the icing sites. Water samples were collected at the icing sites and from Takhini and Liard Hot Springs.

Early in November 1981, a "filling-time counter" and a maximum reading thermometer were installed at the Takhini Hot Spring to monitor the discharge rate and temperature of the spring water.

The hydrochemical sampling program in the Pine Point area and at the open pits has been completed. Data are being analysed.

Observations of discharge and hydrochemical sampling at the three gauging stations is continuing. Data are being analysed.

In recent years the question of ground water flow in high polar latitudes became a matter of concern in relation to disposing of tailings from two new lead-zinc mines in the Arctic: Polaris Mine on Little Cornwallis Island and Nanisivik Mines on Northern Baffin Island. Results of field investigations lead to the conclusion that, at both mine sites, ground water is flowing toward the lakes selected for tailing disposal.

***Plans for 1982-83***

Analysis and interpretation of field results and time-lapse photography taken during 1979-80 and 1980-81 winters at icing sites along the Alaska Highway will continue. Reports will be prepared on studies of icings, frost blisters and geochemistry of springs. A liquid-pressure sensor suitable for use in subsurface environments subject to freezing will be developed. Investigations at spring sites will continue. Field results from the Pint Point area will be analysed and interpreted and various reports prepared.

## Surface Water Division

### *Responsibilities*

In northern areas, the Surface Water Division conducts basic and applied research in the field of permafrost hydrology. It provides consultative services on northern water problems and carries out specific water-related studies both in support of the Inland Waters Directorate mandate and for other government agencies.

### *Review 1981-82*

Summary reports were completed on a three-year study of the Liard River Basin spring flood, conducted for the Mackenzie River Basin Committee. Investigations focused on (1) river ice break-up and jamming on the Fort Nelson and lower Liard Rivers, (2) suspended sediment transport of the Muska, Fort Nelson and Liard Rivers, and (3) thermal mixing of the Liard River and several of its major tributaries. A report was also completed on ice-conditions of the lower Mackenzie River and Mackenzie Delta, based upon break-up and freeze-up observations obtained in 1980. Reports are to be published by the Mackenzie River Basin Committee by the end of the 1981-82 fiscal year.

In the Mackenzie Delta, the Division surveyed the pre-break-up ice thickness. On the lower Mackenzie and in the Mackenzie Delta, observations of ice break-up were made to augment the existing data base and to continue the Mackenzie ice study.

An investigation of the water level of a variety of lakes in the Mackenzie Delta continued in 1981. Time-lapse photography of water levels at three sites within one study area was obtained from spring break-up (late April) until just before freeze-up (September). A second study area was established where time-lapse photography will begin in 1982. The purpose is to provide baseline information for the assessment of the potential impact of increased flow regulation that will result if dams are constructed on the Liard River.

East of the Mackenzie Delta, data were collected at three basin sites in the taiga zone south of Inuvik and at seven basin sites in the tundra zone between Inuvik and Tuktoyaktuk. Surveys of ice accumulation in culverts, river icings, late winter snowpack water equivalent, discharge and meteorological elements were made at appropriate locations in the basins. A report on the 1980 field season is being finalized for presentation to the Northern Roads Environmental Working Group, DIAND.

A 150-page report has been prepared on the interaction between permafrost and river flow at both High and Low Arctic research sites. Ground temperature observations to a depth of 13 metres beneath river channels are presented as isotherms on river valley cross sections for each season. In addition, recordings of riverbed temperatures over three years have been analyzed and found to display certain physical phenomena relevant to oil and gas pipeline construction across intermittent streams in permafrost zones.

### *Plans for 1982-83*

Highway-related hydrologic studies east of the Mackenzie Delta will continue in order to extend the data base. The Delta lake program will emphasize time-lapse photo observation of water levels. Meteorological data collection and hydrochemical analysis will also be undertaken, and further expansion of the number of test sites is contemplated for the year.

The timing of, and, processes involved in, freeze-up and break-up of Mackenzie Delta channels and the Mackenzie River below Fort Simpson will again be examined by means of aerial photography, by ice thickness, and water temperature measurements and by other pertinent observations taken during the field season. More thorough investigations of the occurrence, causes, characteristics and consequences of ice jams on the Mackenzie River are planned.

A study will be undertaken to determine the level and extent of historic flood events and river ice levels at Fort Simpson, Fort Norman, Fort Good Hope, Fort McPherson and Aklavik, N.W.T., in order to help define flood risk zones at those communities.

Research on hydrothermal effects near and under Arctic streams will be nearing completion when papers dealing with the Inuvik and Melville Island areas are published. Analysis will continue on the simulation of hydrothermal patterns under arctic stream beds.

## Snow and Ice Division

### *Responsibilities*

The Snow and Ice Division studies hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology. It also maintains an inventory of perennial snow and ice in Canada.

### *Review 1981-82*

The Division carried out an operation (supported by the Arctic Institute of North America) to retrieve the electro-mechanical ice core drill and 75 m of ice core from the 103 m hole on Mt. Logan. This was done successfully, as was the relogging of the hole for temperature, vertical strain rate and tilt. The top of the borehole was also resurveyed for movement. G.K.C. Clarke, University of British Columbia, (UBC) flew over the area with an airborne radar device and obtained additional ice depth profiles. This work concluded the Mount Logan operation.

Bibliographies of Ellesmere Island glaciers and ice islands of the Arctic Ocean have been compiled.

### *Plans for 1982-83*

The Division will analyze the composition of the ice cores from Mount Logan, particularly to establish the recent climatic history of the area.

### *Water Quality Branch*

**Responsibilities**

The Water Quality Branch collects, analyses, interprets and disseminates water quality data. The Branch obtains these data from specific reference points across Canada and augments them with detailed information collected in comprehensive surveys.

**Review 1981-82**

The Branch provides services to federal programs related to national parks and to data collection and surveys in the Yukon and Northwest Territories. It participates in the analysis of samples and the storage and dissemination of data collected in the Territories. The work for the Northwest Territories is administered by a group from the Inland Waters Directorate offices in Regina and Yellowknife. Work related to the Yukon is administered from the Pacific and Yukon office in Vancouver. The Branch participates in joint studies with DIAND by providing analytical and interpretive services in water quality management programs.

In the N.W.T. an ongoing monitoring project carried out from 16 stations was started in 1978. The monitoring sites are at the same locations as the hydrometric sites and are sampled by Water Survey of Canada (WCS) staff when they visit the hydrometric stations. Besides measuring the major ions and nutrients from mining activities in the North, the sites are routinely measured for total and extractable metals. Two stations in the N.W.T. (Hay and Liard River) are also part of the interjurisdictional monitoring carried out under the mandate of the 1909 Boundary Waters Treaty.

In addition to carrying out its monitoring work, the Water Quality Branch conducts special studies to answer particular questions. For example, together with Geological Survey of Canada — Energy, Mines and Resources (GSC-EMR), the Branch conducted a special survey of 20 lakes in Cape Herschel in 1981 to determine dissolved mineral and organic chemical content. It carried out another project in 1979 to study pesticides and metals in the atmosphere. This study was done in the Cape Herschel as well as in other High Arctic areas. Reports are now being prepared.

As part of the Mackenzie River Basin Study Program, the WQB brought together all water quality data that federal or provincial agencies had collected between 1960 and 1979. These data were published last year in a large report that summarizes all available information on the water quality of the Basin. The report includes a map of all sampling locations. The data have been coded in the National Water Quality Data Bank (NAQUADAT) format. Accordingly, the data are available for statistical analysis to determine any changes or trends that may have occurred over the last 20 years. The WQB is currently analyzing these data and intends to provide an interpretative report that relates the data to the water characteristics in the Basin.

**Plans for 1982-83**

A plan for monitoring water quality in the N.W.T. for 1982-83 will be developed. The plan will more adequately address the environmental concerns resulting from increased development in the North. Recently, the federal, Yukon and B.C. governments reached an agreement under the Canada Water Act to study the water resources of the Yukon River Basin.

This initiative has involved the Water Quality Branch in the design of water quality and trend studies. These studies are intended to result in better information on the dynamics of rivers and will identify potential problems resulting from proposed resource developments. Reports on studies of the Schwatka Lake and international boundary reaches of the Yukon River are being published. These reports will be helpful to the Branch in designing the studies noted above.

The Branch will continue to co-operate with DIAND and other water-related services of Environment Canada in northern basin studies and in other water quality management programs by providing analytical and interpretive support.

### *Water Planning and Management Branch*

**Responsibilities**

This Branch plans water resource studies, develops programs to reduce flood damage and improve water management and advises the Territories on water planning and management. The Branch participates in assessments of the environmental effects of development projects.

**Review 1981-82**

On November 24, 1980, the Yukon River Basin Agreement was signed by Ministers representing Canada (Environment, Indian Affairs and Northern Development), British Columbia and the Yukon Territory. The Agreement provides for an intergovernmental committee to direct various studies. They are to be carried out over a three-year period at a total cost of $2.2 million, and will assess the environmental implications of resource development alternatives in the Yukon Basin. An intergovernmental task force reporting to the Yukon River Basin Committee has described the various projects involved, and the Committee has set appropriate priorities.

A final study report of, and eight supplements to, the Mackenzie River Basin Study were reviewed by the Mackenzie River Basin Committee. The material was submitted to the governments of Canada, Alberta, British Columbia and Saskatchewan and was released in February 1982.

Work continued on mapping flood risk areas in six communities in the Northwest Territories. This work was carried out according to a Flood Damage Reduction Agreement signed in 1979. A similar agreement for the Yukon Territory is being negotiated.

**Plans for 1982-83**

Negotiations will continue toward reaching a Flood Damage Reduction Agreement for the Yukon Territory.

Negotiations leading to an intergovernmental agreement on quality and quantity of Mackenzie Basin waters at boundary crossing points may begin in 1982-83.

## *Water Resources Branch*

***Responsibilities***

The Water Resources Branch operates through two Divisions: the Water Survey of Canada Division and the Hydrology Division. There are eight Water Resources Branch regional offices across Canada. Six of them are headed by Regional Chiefs in Vancouver, Calgary, Regina, Winnipeg, Guelph and Dartmouth. The seventh office, headed by a Chief, N.W.T. Programs, was established in 1980 and is located in Yellowknife, N.W.T. The eighth is headed by a Supervisor of Operations and is located in Longueuil, Quebec. The Vancouver Regional Office administers Water Resources Branch programs in the Yukon Territory.

The responsibilities of the Water Resources Branch include collecting, processing, analysing, storing, interpreting and providing water quality and sediment content data to assist water resources management regimes.

The Branch also provides advice and assistance in preparing briefing notes and background and position papers for developing policies on various aspects of national water programs.

## *Water Survey of Canada Division (Headquarters)*

***Responsibilities***

This Division (Headquarters) provides technical support to the Survey's Regional Offices. It develops techniques and standards for the collection, computation and publication of data. The Division maintains data banks, does planning for the network of sediment stations, conducts non-routine hydrometric field surveys and measures the discharge rates of rivers under varying flow conditions. The Division measures the sediment deposited by rivers and surveys and studies the physical changes that occur over time in river channels, drainage basins and estuaries.

***Review 1981-82***

The "automated moving-boat flow-measuring system" was modified so that it could be used with inflatable boats.

Data collection platforms (DCP's) designed and built in Canada continue to operate in several regions.

A consultant's study provided advice on how the WRB should receive and transmit data sent by satellite. The recommendation to improve and continue to use the Prince Albert receive site is under investigation. The Division completed a study to determine the future electronic data processing (EDP) requirements for the Water Survey of Canada. The Division reached an agreement with the Canadian Hydrographic Service of the Department of Fisheries and Oceans concerning the operational responsibilities of tidal stations in each region.

In co-operation with the National Research Council, the Division installed an experimental solar energy system for trials at a test station in Ottawa. The system is intended to power instrumentation at hydrometric stations at northern or remote sites. Also under development are data collection platforms that will accept data from a combination of hydrometric and meteorological sensors. A digital solid state data recorder is undergoing field testing. Eventually, these recorders are expected to replace the analog strip chart recorders at sites where conditions warrant their installation. The manufacturer is keenly interested in these field trials and has already redesigned the units to incorporate suggested improvements.

***Plans for 1982-83***

Work will continue on the development and testing of the moving-boat flow-measuring system. The new system incorporates a micro-processor that will compute the flow as it is being measured. A possible site for the use of the system in 1982 is the Mackenzie River. A new mini-computer with various peripheral devices will be installed and programmed at Headquarters as the first stage in the program of renewing the EDP system in each regional office.

## *Water Survey of Canada Division (Regional)*

***Responsibilities***

Water Survey of Canada (WSC) collects, computes and publishes surface water data for most of Canada. Besides operating a network of hydrometric gauging stations, WSC collects water samples for analysis. It also constructs, operates and maintains stations for recording water levels. These stations provide information on tides and water levels for the Canadian Hydrographic Service of Ocean Science and Surveys, DFO.

***Review 1981-82***

In the Yukon Territory, the Division built four new gauging stations. The WSC now operates 67 stations in the Yukon Territory.

In the N.W.T. the usual hydrometric data acquisition program was carried out at 127 stations. Twelve of these stations were equipped with DCP's. The Division also operated six tidal stations, two sediment stations and four meteoriogical stations for DIAND. Water level elevation forecasts for the Mackenzie River were provided each day, but because the water levels on the river were the lowest ever recorded, ten-day advance forecasts were also calculated.

Cross-sections were surveyed along the Peace River as input to a mathematical model that the Water Planning and Management Branch is developing for the Canadian Wildlife Service.

***Plans for 1982-83***

On April 1, 1982, under the terms of an agreement with the Canadian Hydrographic Service, the WSC will relinquish its survey responsibilities at tidal water level stations in the Arctic archipelogo and along the north coast. The WSC began this field work approximately 14 years ago as a result of a government reorganization at that time.

In the Yukon Territory the WSC will continue to operate its network of 67 gauging stations.

The current program of operating the 127 hydrometric, 2 sediment and 4 meteorological stations will continue unchanged, and reconnaissance work for the future installation of stations will be carried out.

### *The Hydrology Division (Headquarters)*

The Division conducts studies to support and complement the data collection activities of the Water Survey of Canada Division. Its responsibilities include the development of hydrological analytical methods and advising regional staff in the area of data interpretation and network evaluation. It carries out joint Regional/Headquarters studies and represents Branch, Directorate and Service in interagency activities at regional, national and international levels.

### *Review of 1981-82*

Several new statistical techniques for hydrologic analysis were developed, computerized and documented in reports and distributed to the regions and to the general public. A paper was also prepared jointly with members of the Water Planning and Management Branch. This paper discussed the theoretical foundation of one of the foregoing techniques and was accepted for publication in the "Journal of Hydrology". The Division also conducted seminars in the Regions on the use of these new techniques.

The Division began preparatory work related to the evaluation of various mathematical models describing the relationship between variations in climate and stream flow. Work was also started on a data collection network to augment hydrometric data and information resources.

A procedure has been developed for storing and retrieving Canadian reference documents that are to form the material for the HOMS National Reference Centre. HOMS (Hydrological Operational Multipurpose Subprogramme) of the World Meteorological Organization (WMO) Operational Hydrology Programme is a mechanism for hydrological technology transfer among members of the WMO for use in their water resources projects.

### *Plans for 1982-83*

Techniques and procedures will be documented or developed to enable short periods, for which data were not reported in the hydrometric data base to be filled in. Studies will be undertaken to improve existing and develop new documentation techniques for flow frequency analysis and estimation of stream flow. Finally, an evaluation by contract of the hydrometric network in the N.W.T. will be conducted.

## Parks Canada

### National Parks Activity

### *Responsibilities*

National Parks evaluates geographical areas to determine their potential as national parks and landmarks, and manages existing national parks.

### *Review 1981-82*

*New Park Studies*

Parks Canada has identified preliminary areas or "Natural Areas of Canadian Significance" (NACS) in each of the 15 natural terrestrial regions that are mainly in the Territories. Four of these regions have a park in them now and two others have land set aside as possible sites for future parks. Areas in five other regions either have been or will be designated as NACS.

*Northern Yukon*

In 1978, as part of the COPE Agreement in Principle, 38 850 square km were withdrawn for park use and other conservation purposes. An assessment of non-renewable resource on these lands has since been carried out.

*Northern Ellesmere*

A memorandum of understanding to establish a National Park Reserve was signed on February 25, 1982 by the Honourable Tom Butters, the Territorial Government's Minister of Economic Development. The proposed Park Reserve would cover approximately 35 000 square km, and would include some of the most northerly land in Canada.

*Northern Baffin Island (Bylot Island/Eclipse Sound)*

Parks Canada reviewed the proposed national park area as part of the Lancaster Sound Regional Study.[1] Meetings were held in northern communities to determine support for the proposal. Boundary studies were carried out.

*East Arm Great Slave Lake*

Attempts were made to re-open discussions with representatives of the community of Snowdrift on a National Park proposal for which lands were withdrawn in 1970. Community representatives have indicated they are not interested in discussing the proposal. A non-renewable resource assessment was carried out.

### *Plans for 1982-83*

Parks Canada's Prairie Region will establish a district office in Yellowknife for implementing new National Park planning proposals.

Park planners will discuss the Park Reserve idea in the North Baffin Island area with the Government of the Northwest Territories, the Department of Indian Affairs and Northern Development and residents of Pond Inlet. The purpose of these discussions is to develop a memorandum of understanding covering the Park Reserve.

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[1] The reader is referred to the Indian and Northern Affairs chapter of this publication for a description of the Lancaster Sound Regional Study.

Most of the terms and conditions in the Northern Ellesmere memorandum of understanding will be implemented. It will also include a socio-economic/tourism strategy.

Parks Canada will develop plans for the disposition of land that has been withdrawn for a National Park Reserve at Artillery Lake/East Arm, Great Slave Lake.

*Federal/Territorial Parks Consultative Committee*

***Review 1981-82***
The Federal/NWT Parks Consultative Committee met in Grise Fjord in October 1981. The purpose of the meeting was to review the draft memorandum of understanding for the Northern Ellesmere National Park proposal, to discuss the proposal with community residents and to review other park-related matters of common interest.

A similar Federal/Yukon Parks Consultative Committee was established and met in Whitehorse in March 1982 to discuss topics such as the development at Kluane and Dawson City and new National and Territorial Park proposals. The co-chairpersons of the Committee are the Yukon Deputy Minister of Renewable Resources, and the Assistant Deputy Minister, Parks Canada.

*Kluane National Park*

***Review 1981-82***
An Area Plan for the Slims River access corridor was prepared. The development proposal and schedule were reviewed at a meeting of the Federal/Territorial Parks Consultative meeting in March.

Negotiations continued with the Council of Yukon Indians on land selection and other conditions for settling land claims of the Champagne/Aishihik and Burwash Landing Bands affecting Kluane National Park.

***Plans for 1982-83***
The Slims River Area Plan will be released to the public in the summer of 1982. At that time, design work on the area will begin, and it should be open to the public in 1985-86. An agreement in principle on land claims settlement affecting Kluane National Park is expected by the fall of 1982.

*Nahanni National Park*

***Review 1981-82***
Parks Canada has determined that regional planning in the South Nahanni River watershed is necessary to ensure that development in the watershed does not adversely affect Nahanni National Park. Representatives of DOE Services indicated at hearings of the N.W.T. Water Board that such planning was essential. The hearings dealt with two applications for water licences—one from Cadillac Explorations Ltd. and the other from Canada Tungsten Mining Corporation. The need for regional planning as well as Interim Management Guidelines in the watershed was also demonstrated to the Department of Indian Affairs and Northern Development. A leaseline and process for monitoring water quality are being prepared by various DOE Services that are involved in the Nahanni area.

Parks Canada has agreed to provide orientation and information services at a visitor centre being built by the Government of the Northwest Territories at Blackstone River.

In August 1981, a large forest fire burned over a 73 300 hectare forest area in the Nahanni National Park. Facilities destroyed by fire at Nahanni Butte, have been replaced.

***Plans for 1982-83***
The Department of Indian Affairs and Northern Development will be launching a two-year study in the Nahanni area. Its purpose is to enable the Department to prepare guidelines for developing the area. Guidelines may include a land zoning plan and specify pollution control measures and monitoring systems.

A three-year study aimed at defining aquatic baseline conditions in Nahanni National Park will be carried out. The Inland Waters Directorate (Federal DOE) will carry out the water quality studies, and the Canadian Wildlife Service will conduct the biological studies. The Lands Directorate will also be involved in a one-year mapping study of the Mackenzie Mountains area that will include Nahanni National Park.

Regional planning, mapping and aquatic baseline studies, if effectively co-ordinated, will provide the information necessary to ensure that Nahanni National Park is protected from upstream developments in the South Nahanni River watershed.

Terms of Reference for preparing a Management Plan for Nahanni National Park will be developed, and the planning program will begin. Parks Canada will also carry out a study to describe and analyze the Park's resources.

*Auyuittuq National Park*

***Review 1981-82***
After consulting with the public in the summer of 1981, the Department completed the Interim Management Guidelines for the Park early in 1982.

***Plans for 1982-83***
The Interim Management Guidelines are scheduled to be printed and distributed in the summer of 1982. Further information meetings on the Guidelines will be held with the Government of the Northwest Territories and local residents.

*Wood Buffalo National Park*

***Review 1981-82***
The Wood Buffalo Management Plan Program continued through 1981-82. Plan options were prepared and reviewed with the public from November to January.

The Park experienced one of its worst fire seasons with over 650 000 hectares of land being burned. Over $2.6 million was spent on controlling and fighting these fires.

**Plans for 1982-83**

During the summer of 1982, Park's Canada will review a draft management plan with local communities and the general public. The final plan is expected to be approved by the Minister in late 1982. Design work will then begin on a new park administration and information complex in Fort Smith.

*Klondike National Historic Sites*

**Review 1981-82**

More staff in archaeology, extant recording and restoration design have been decentralized.

A restoration specialist was seconded to the Yukon Government to assist with implementation of the Tourism Subsidiary Agreement.

A strategy for implementing the management plan approved in 1978 is being developed. This strategy will assign priorities for implementing parts of the plan up to 1990, according to current and expected economic conditions.

**Plans for 1982-83**

The strategy for implementing the Management Plan will be completed. The Park will improve its maintenance capability, thus freeing existing staff for new development work. Restoration of the St. Andrew's manse for staff housing will be completed and work will begin on restoring Winaut's Store.

*Whitehorse National Historic Sites*

**Review 1981-82**

On July 1, 1981 the S.S. Klondike was commemorated officially as a National Historic Site. The vessel and other visitor facilities were officially opened at a public ceremony in Whitehorse. This opening marks the culmination of seven years of work by Parks Canada to restore and furnish this historic vessel.

Discussions continued with officials of B.C.'s Heritage Resource Branch on acquiring 80 square miles of land in the Northwest corner of the Province. The land would be used to establish the Chilkoot Trail portion of the International Gold Rush Trail Historic Park, which stretches from the Alaska coast at Skagway and along the Yukon River to Dawson City.

**Plans for 1982-83**

A memorandum of agreement to acquire land and to establish a National Historic Park in the area of the Chilkoot Trail is expected to be signed during the summer of 1982.

**Canadian Forestry Service**

*Pacific Forest Research Centre*

**Review 1981-82**

The Centre completed the five-year assessment of the regeneration of white spruce by natural seed-fall and by artificial seed placement on river flood plains at two locations near Watson Lake. Regeneration data obtained by low level aerial photography of the Watson Lake area were analyzed.

The Yukon continues to be an important source of seed (particularly lodgepole pine seed) for Scandinavian countries. The Centre has been testing and certifying seeds at collection sites, where seeds are tested for purity and germination.

The Centre developed management plans for preventing the valuable lodgepole pine stands from being over-exploited commercially. The plans were developed in response to requests from the Northern Affairs Program of DIAND.

During 1981 the Centre completed maps showing the vegetation cover of the East Kluane Planning and Kusawa Lake areas. Field examination were conducted in parts of "Ecoregions" 4, 6, 7 and 8 to collect data on forest productivity and plant succession. This work is a part of program designed to classify the forest land in the Yukon Territory and develop renewable resource and forest management statistics that can be incorporated in the National Forest Statistics Program.

Field work was completed on the Kluane National Park Fire History phase of the fire management plan for the Park. Types of fuelwood in the area were identified, and a fire hazard rating scheme was prepared and field-tested in the Park.

A preliminary survey of vegetation and certain environmental factors along the Dempster Highway was completed and the results reported.

Populations of forest pests (insects, caterpillars, etc.) were monitored at sample points along the Alaska Highway to assess the damage done to trees. The most noteworthy damage was the defoliation of trembling aspen by the *large aspen tortrix* in the Aishihik River, Beaver and Dawson creeks, Little Salmon and Little Atlin lake areas.

**Plans for 1982-83**

The PFRC plans to continue its diversified approach to gathering forestry data.

The five-year growth measurement from the seeding and planting trials at Watson Lake will be reported. The Centre will extend the regeneration survey begun in 1980-81. The purpose of this work will be to determine what inhibits the ability of trees to regenerate at particular sites.

The PFRC will continue to certify the quality of lodgepole pine seed for sale on international markets by testing these seeds for purity and germination. The certification program is expected to expand to more seedlots.

Three ecoregions will be surveyed in order to develop plans for managing the forests and wildlife and to assess the amount and typeof fuelwood available in these areas.

Statistics on renewable resources for tbe Yukon will be organized in a new computerized data base. This work will involve input from PFRC; Forestry Branch, DIAND; and FORSTATS. This data base will provide forest management statistics for the Forestry Branch DIAND and information for the National Forests Statistics Data Base.

The first phase of a forest fire weather index for the Forestry Branch DIAND planning program for protecting settlements from forest fires will be tested. A report entitled Kluane National Park Fire History and Fire Management Planning Study will be completed.

Finally, the Centre will carry out its annual Insect and Disease Survey of the Yukon.

*Northern Forest Research Centre*

***Review 1981-82***

A new study of the effect of variations in climate on the productivity of forests was continued. The Centre contributed to reviewing development proposals and assessing the environmental impact of projects such as the Beaufort Sea Development, Borealis Mine, Liard Highway and the Peace River Hydroelectric Development. A major upgrading of the Large-Scale Photo Sampling System was undertaken with funding obtained from the Department of Indian and Northern Affairs. Forest insect and disease surveys were conducted near Fort Simpson and along the Little Buffalo and Slave Rivers. An economic study on the capacity, production and demand for forest products in the Northwest Territories was completed.

The Centre also represented the CFS on the Fire Management Program Committee to help develop forest management policies and programs in the N.W.T.

***Plans for 1982-83***

PFRC will continue to assess the effect of climate variations on forest productivity. It will participate in the federal environmental assessment process. Baseline studies in proposed development areas in Lancaster Sound, Bylot Island and Eclipse Sound will be undertaken. The value of the Large-Scale Photosampling System will be assessed for carrying out regeneration surveys in co-operation with the Yukon Forest Service.

Surveys of forest insects and diseases will be conducted after consultation with DIAND. A major study of fire and its control will be carried out in black spruce stands at Porter Lake, N.W.T. This work will be done in co-operation with DIAND. The Centre will be represented on the northwest Fire Management Program Committee. The data on the forest industry in the N.W.T. will be analyzed and a report will be prepared.

*Forest Statistics and Systems Branch (FSSB)*

In 1981, FSSB completed mapping the forest lands in the Northwest Territories. The mapping covers 115, 1:250 000 MTS map sheets for a total of 1 092 944 square km. It includes Wood Buffalo and Nahanni National Parks. In all, 30 000 air photos and 25 LANDSAT images were interpreted. The data were entered in the Canadian Forestry Resource Data System (CFRDS) and are included in the national data base.

Data from the PFRC Yukon RRAMS was converted to CFRDS format and merged with the national data base.

Fire monitoring from 1981 LANDSAT images will be completed in mid-1982 for both the Northwest and Yukon Territories.

## Lands Directorate

***Responsibilities***

The Directorate conducts research, provides data and information on land characteristics and provides policy advice on nationally important land use issues. It promotes environmentally sound land planning and management, collects data, carries out research and plans programs in co-operation with other federal departments and agencies. This co-operative effort ensures that all programs comply with the guidelines of the Federal Policy on Land Use.

*Land Resources and Data Systems Branch*

***Review 1981-82***

The Land Use Monitoring Division continued with its research on and production of the Land Use Information Series maps of the Northwest Territories. The Division finished compiling, drafting and printing 29 maps (scale 1:250 000) for the north Baffin Island - Lancaster Sound region. It completed the research and surveys for another 29 map sheets in the Viscount Melville Sound Area.

The Land Use Information Series maps are now available for most of the mainland area of the Yukon and the Northwest Territories. They combine a wide range of data on renewable resources and the activities associated with them. The maps present information on wildlife and fish habitat areas, native hunting and trapping areas, development areas, mineral resources, historical sites and ecological characteristics. They also contain information useful to land use administrators, planners and communities. The mapping program is financed jointly by Environment Canada and Indian and Northern Affairs Canada. Several other federal agencies also participate in the program.

In conjunction with the mapping program, the Ecological Land Classification and Evaluation Division provided an ecological overview of the Baffin Island - Lancaster Sound region which included: ecodistrict map-unit boundaries; generalized descriptions of relief, landforms, geology, soils, water features and vegetation; climatic information and ecoregion descriptions; and a coastal classification. Two ecological land survey reports were published — one for the northern Yukon Territory, the other for the Lockhart River map area in the south-central Northwest Territories. An ecological map for the Lancaster Sound 1:1 000 000 scale NTS map sheet was produced. In addition, ecological baseline studies were undertaken in the Beaufort Sea Region.

***Plans for 1982-83***

The 29 Land Use Information Series maps of the Viscount Melville Sound region will be completed during this year. Field research and map compilation will be carried out for 24 maps in the south Victoria Island - northeast Keewatin area. Several reports and papers relating to various aspects of this program will be published. It is expected that the agreement between Environment Canada and Indian and Northern Affairs Canada will be extended to 1988 in order to complete the mapping north of 60°N.

The Ecological Land Classification and Evaluation Division will provide a general ecological overview and a coastal classification for the Northern Land Use Information Series maps. An ecological map for the Viscount Melville Sound 1:1,000,000 scale NTS map sheet will be produced. In addition, ecological baseline studies will be undertaken for the Mackenzie Mountains region.

*Policy Research and Development Branch*

***Review 1981-82***
The Federal Land Services Division coordinated the preparation of an inventory of northern areas of significance to the conservation programs of Parks Canada and the Canadian Wildlife Service. The inventory will serve as a basis for developing and co-ordinating departmental plans, and facilitating consultation with other organizations about the designation of various types of protected conservation areas in the North. The Branch also helped to evaluate and further develop DOE policies and program strategies for the North, and advised on submissions related to placer mining in the Yukon.

***Plans for 1982-83***
The Branch will continue to assist in the formulation of Environment Canada's positions on native land claims and departmental policies on the North.

*Pacific and Yukon Region*

***Review 1981-82***
The Lands Directorate's regional office co-ordinated the preparation of DOE's advice to the Northern Pipeline Agency. Part of this activity included a review of the Yukon portion of the proposed Alaska Highway natural gas pipeline. Of particular note was an assessment of the Ibex Pass alternatives. The regional office also continued to provide a member on the EARP Panel, which is reviewing the Alaska Highway natural gas pipeline proposal.

***Plans for 1982-83***
The Branch will continue to review documents pertaining to the environmental impact assessment of the Alaska Highway gas pipeline. It will also continue to provide advice concerning the Northern Pipeline Agency/Foothills Pipeline environmental plans, procedures manuals and monitoring program.

Advice and services to the Yukon Government resources inventory program will be continued. It is anticipated that ecodistrict mapping for the southern half of Yukon will be completed. In co-operation with the Directorate's headquarters, shoreline mapping in the Beaufort Sea region will be carried out.

### Canadian Wildlife Service

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs under the Migratory Birds Convention Act and the Canada Wildlife Act. The Service co-ordinates federal, provincial and territorial action on common wildlife problems. It carries out surveys, develops inventories of wildlife and does research on wildlife species and their habitats. Finally, it collects and analyzes data on the animal population and studies wildlife diseases and the effects of toxic chemicals on birds and animals.

*Migratory Birds Projects*

***Review 1981-82***
CWS continued its program in Wood Buffalo National Park involving research into the breeding and population of the only breeding, wild flock of whooping cranes in the world. CWS also co-operates with the U.S. Fish and Wildlife Service to transfer excess whooping crane eggs to Grays Lake, Idaho. By placing these eggs in "foster nests" of the sandhill crane, biologists are trying to create a second, self-perpetuating wild flock. Also in co-operation with its American counterpart, CWS studies migration patterns and locates stop-over areas of radio-equipped whooping cranes migrating between the Northwest Territories and Texas.

In 1979, CWS completed the white-fronted goose banding project on the Anderson River Delta. This concluded a U.S./Canadian five-year co-operative migratory bird management program.

CWS participated in co-operative research into the distribution, population dynamics, behaviour and ecology of lesser snow geese and Canada geese in the Hudson Bay region. The Service partially financed some programs and was actively involved in others.

***Plans for 1982-83***
The Service will continue to carry out its whooping crane research at Wood Buffalo National Park and to transfer the eggs of these birds to Grays Lake, Idaho. CWS expects to do more co-operative radio-tracking of migrating whooping cranes.

*Mammalogy Studies*

***Review 1981-82***
Major studies on the biology and behaviour of the polar bear continued in the western, central and eastern Arctic. Studies of the distribution and number of seals and arctic foxes are being conducted concurrently because of the ecological relation of those animals to polar bears.

Research continued on barren-ground caribou populations. Work centered on calf mortality and the influence of insects and climate on caribou. Negotiations between the CWS and other agencies have resulted in a draft agreement covering the management of the Beverly-Kaminuriak caribou herds.

**Plans for 1982-83**

Polar bear studies will continue and field work will be extended into the Foxe Basin Region.

The Service will continue to monitor wood bison released in the Nahanni Butte area.

Studies on barren-ground caribou mortality will continue. If suitable co-operative arrangements can be made with the Territorial Government, CWS will study the range selection of caribou and the effect of recent fires on their movements.

*Environmental Studies*

**Review 1981-82**

Two seasons' work have now been completed on the Eastern Arctic Polynya Project. CWS has mapped fulmar and black guillemot colonies on Cape Vera and has estimated their population. As well, CWS has located and mapped colonies of arctic tern, common eider, black guillemot and glaucous and Thayer's gull on Calf, Devil and Ste. Helen's Islands. A survey of literature and an overview of the biology of polynyas was completed and published as "CWS Occasional Paper No. 45".

At the request of Parks Canada, CWS participated with the Canadian Forestry Service in a natural resource survey of a potential national park site in northeastern Axel Heiberg Island.

**Plans for 1982-83**

The third year of field work for the Eastern Arctic Polynya Project will continue on seabirds. More work will be carried out to further determine the importance of high Arctic polynyas to polar bears and marine mammals.

CWS also plans to carry out a co-operative natural resource survey of a possible national park site on Bylot Island.

*Assessment, Enforcement and Habitat Studies*

**Review 1981-82**

CWS conducted field surveys to collect information on key concentration areas of migratory birds. The areas surveyed were the coastal regions of the Beaufort Sea, including the outer Mackenzie Delta and Banks Island, as well as the Tuktoyaktuk Peninsula and part of the Yukon coastline.

CWS has undertaken a project to identify the significant natural resources of the Mackenzie Valley and Delta, the Beaufort Sea and the Northwest Passage. This work, to be completed in 1982, is in preparation for the review of the Environmental Impact Statement (EIS) for the Beaufort Sea development and the subsequent Panel Hearings. The project will result in an "inventory" of the location and characteristics of all significant natural resources in the areas noted above. The project will also propose ways of protecting these resources to the extent possible from the effects of development.

In order to assess the potential impact of the proposed Borealis Iron Ore Mine development on the Melville Peninsula, CWS conducted field surveys to determine the concentrations of migratory birds around the development areas. In addition to carrying out this field work, CWS used satellite technology to classify the vegetation and surface features of the development area. This work helped to determine the areas in which significant numbers of birds were concentrated.

CWS screened a number of land use permits, issued appropriate permits on migratory bird sanctuaries and carried out biological studies of birds at the McConnell River Sanctuary on the west shore of Hudson Bay.

In June 1981, the Service determined the population of snow geese nesting in the western Arctic. This work was carried out through the use of aerial photography. Investigations into the distribution and habitat of these birds were conducted in Hudson Bay and the Queen Maud Gulf.

**Plans for 1982-83**

CWS will continue to conduct field surveys in the Beaufort Sea and environs to assess the potential effects of Beaufort Sea hydrocarbon developments on wildlife.

The exercise to identify all significant wildlife resources of the Mackenzie Valley, Beaufort Sea and the Northwest Passage will be completed. The EIS for the Beaufort Sea development will be reviewed.

CWS will be increasingly involved in reviewing potential hydro development on the Slave and Liard Rivers to assess its possible impact on wildlife.

CWS will complete an air photo survey of Ross' and snow geese nesting in the colonies of the central Arctic (Queen Maud Gulf Migratory Bird Sanctuary). Investigations of goose distribution and habitat in the west Hudson Bay and Queen Maud Gulf areas will continue. A management strategy for the Bylot Island Sanctuary will be developed.

The Service will monitor Arctic commercial developments more closely to determine the degree of compliance with the Migratory Birds Convention Act and Regulations.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 29 156 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Protection of the Environment | 12 668 | 43.4 |
| Economic Growth | 11 007 | 37.8 |
| Sovereignty and Security | 2 859 | 9.8 |
| Leisure and Recreation | 2 311 | 7.9 |
| Quality of Life | 311 | 1.1 |

# External Affairs

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. It advises on matters having foreign policy implications, maintains a co-ordination and operational role in matters of international law and policy relating to the Arctic and negotiates agreements with other countries proposing activities in the North. Within the Department of External Affairs, a number of bureaux handle different aspects of Arctic matters. (Early in 1982, the trade sector of the former Industry, Trade and Commerce Department was merged with External Affairs. At the time of writing, the precise effect of that organization on External Affairs' role in Northern matters had not been determined.)

The Bureau of Energy, Investment and Science Relations co-ordinates Canadian policy on international and intergovernmental co-operation in Arctic scientific and environmental matters. It provides advice to government departments on international policy aspects of scientific conferences and international Arctic expeditions. As well, the bureau advises on scientific exchanges and agreements between Canada and other circumpolar nations. The Bureau facilitates international contacts between Canadian government departments and agencies and their foreign counterparts. When a foreign nation wishes to carry out scientific activities in the Canadian North the Bureau acts as the liaison between the foreign country and the various departments that are involved in considering the request. The Bureau also co-ordinates departmental responsibilities in transportation matters, including the international aspects of Arctic civil aviation and Arctic shipping. It co-ordinates information-gathering on external developments pertaining to Arctic transportation technology and plays an active role with respect to environmental issues in the OECD, UNEP and the UN Economic Commission for Europe (ECE).

The Bureau of Energy, Investment and Science Relations monitors foreign economic interest in the development of the Canadian North. The Bureau works to ensure that any development will be both consistent with our international commitments and policies, and in keeping with our own objectives for economic development. The Bureau also co-ordinates activities on the international aspects of large energy projects in the arctic.

The Bureau of Legal Affairs ensures that Arctic activities and programs are consistent with existing and evolving principles of international law. For example, the Bureau oversees the application of Canada's rights and duties as contained in the 1968 Convention on the Continental Shelf. The Bureau consults with departments and agencies that are responsible for the surveillance of coastal waters and for enforcement activities arising from related legislation. The Bureau is concerned with the use of Canadian arctic waters by foreign ships. It also provides the chairman of the Interdepartmental Panel on Arctic Waters. The Bureau co-ordinates Canada's international efforts to prevent ocean pollution, according to the 1970 Arctic Waters Pollution Prevention Act.

The Bureau of European Affairs is responsible for co-ordinating relations with the Nordic countries. It handles many of the exchanges and activities between Canada and these countries on northern issues. The Bureau heads the Circumpolar Affairs Panel created in April 1979 to promote greater co-ordination within the Department when dealing with foreign policy questions relating to the North.

The Bureau of United States Affairs co-ordinates Canada-United States relations in the Arctic. The Bureau is involved in matters having to do with areas such as science, technology and communications. As well, the Bureau co-ordinates bilateral energy, environment and transportation questions, particularly along the 1 000 km Alaska/Yukon border. It is responsible for the foreign policy aspects of northern pipelines. These responsibilities include monitoring the United States' activities associated with the Alaska Gas Pipeline and the termination of the Haines-Fairbanks Pipeline. It co-ordinates the foreign policy aspects of Beaufort Sea oil drilling, holds ongoing consultations with the United States about the environmental aspects of the Canadian exploration program and forthcoming US lease sales. The Bureau is concerned with a series of northern environmental questions such as trans-boundary pollution, migratory birds and wildlife, bilateral co-operation in creating and managing parks and historic sites, designating and managing "wild" rivers, and management of trans-boundary rivers. In transportation, it has been responsible for co-ordinating the foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project) and the White Pass and Yukon Railway.

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and various Canadian government departments. In matters relating to protecting Canada's security and sovereignty in the Arctic, the Bureau works mainly with the Department of National Defence.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the Arctic for approximately 20 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is given an opportunity to visit the Arctic during his or her tour of duty in Canada.

The Bureau of Information provides Canadian diplomatic posts abroad with information on northern issues and concerns. In 1981, the Bureau filled many requests from foreign journalists who wanted information about Canada's North. Photographs depicting conditions in the Arctic, its geography and its people were sent out for use in post publications and as part of the general information program. Several foreign journalists and "opinion-formers" visited the North under the Department's auspices during 1981. The Bureau of Information purchases copies of films dealing with northern Canada and distributes them to posts, where they are shown to local audiences.

The Bureau of International Cultural Relations is responsible for travelling exhibitions of Canadian art. Exhibitions include two collections of Eskimo prints from the Department's permanent collection and an exhibit entitled *Inuit Retrospective*, which belongs to the National Museum of Man. The Bureau is in charge of co-ordinating those activities of Canadian agencies and the UNESCO Secretariat directed toward including Canadian sites on the World Heritage List. Two of the four Canadian sites on that list are in the North: The Kluane National Park in the Yukon and the Nahanni National Park in the Northwest Territories.

The Department's Passport Office has prepared a passport information pamphlet for person living in the North. A supply of these pamphlets was sent to the Northern Operations Branch of the Department of Indian and Northern Affairs in the Yukon. They explain how to apply for a passport and direct attention to the services that regional passport offices across the country provide. The information pamphlets also explain the procedures to follow in the event of an emergency travel situation.

Departmental information services are provided to the two Territories. Each year, a Commonwealth Day poster and teacher's guide are distributed to schools in the North. Many N.W.T. and Yukon residents are on departmental mailing lists for copies of press releases, speeches and statements on Canadian foreign policy and international relations. The Department's travel advice booklet *Bon Voyage, but ...* is distributed in the North. From year to year, group visits to the OECD (in Paris), NATO and the ED (in Brussels) include a representative from either the N.W.T. or the Yukon.

# Federal Environmental Assessment Review Office

***Responsibilities***

On December 20, 1973, the Cabinet established a federal Environmental Assessment and Review Process (EARP). Its purpose was to assess the potential environmental consequences of federal projects and to take these findings into account in planning and carrying them out.

EARP covers projects that need federal funds, that are initiated or sponsored by federal departments and agencies requiring federal funding, or which involve federal property. All federal departments and agencies are subject to the Process, except proprietary Crown corporations and any regulatory agencies that are invited to participate.

The Federal Environmental Assessment Review Office (FEARO) administers EARP. Its Executive Chairman reports to the Minister of the Environment.

Under the Process, departments and agencies screen proposed projects for their potential adverse effects. If the effects are not apparent, a more detailed examination known as an Initial Environmental Evaluation (IEE) is carried out. FEARO encourages organizations to solicit public input in the early stage of planning any activities that may be environmentally sensitive. If either the screening or the evaluation indicates potential significant effects, the project is referred to FEARO for a formal review.

Each project is reviewed by an independent panel appointed by the Minister of the Environment.

A panel reviewing a project publishes guidelines for the Environmental Impact Statement (EIS). This statement is prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential effects of the project and contains conclusions and recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

***Review 1981-82***

The two joint provincial-federal reviews of the southern component of the Arctic Pilot Project were completed. This Project was proposed by a consortium that includes Petro-Canada. It involves liquefying 6.4 million cubic meters of natural gas a day from Melville Island and shipping it to eastern Canada by ice-breaking tankers. Two choices for a receiving terminal in the south were considered: Gros Cacouna, Quebec and Melford Point, Nova Scotia. The Quebec review considered a receiving terminal and the shipping route off the Quebec shore. In Nova Scotia, the review looked at a terminal and the shipping route from 60° N to Melford. Both panels concluded that the project could proceed, subject to certain conditions.

The panel review of the Baffin Bay exploratory drilling program has been delayed pending the outcome of the Lancaster Sound Regional Study. The project, proposed by Petro-Canada, would involve exploratory drilling for hydrocarbons near the eastern limit of Lancaster Sound.

In June, the review of the proposal by Foothills Pipe Lines Ltd. to build a large diameter gas pipeline through Canada, from Alaska to the states below the border, continued. The panel considered a 90 km stretch through the Ibex Pass near Whitehorse, as well as 11 other possible route combinations. In its July 1981 report to the Minister, the panel concluded that the Ibex route, the one favoured by the Company, should be rejected because of the adverse environmental effects that could result from increased access to this remote area. The panel also felt that the route would eliminate the option of the Alaska line joining with the proposed Dempster lateral pipeline.

A panel was formed to assess the proposed Slave River hydro project near Wood Buffalo National Park. It issued guidelines for an EIS and is now awaiting the results of a two-year feasibility study by Alberta before continuing its review.

In June, the Beaufort Sea panel distributed draft guidelines for an EIS for the Dome, Esso and Gulf project to exploit the oil and gas reserves in the Beaufort Sea. The Companies propose to extract oil and gas and ship these products south by pipeline or ships, or both. During November and December of 1981, the panel held public meetings across the Arctic to discuss the draft guidelines. It heard comments not only about the guidelines, but about the review process itself. At the end of March, the final guidelines were distributed and the panel was preparing an interim report to the Minister, based on its meetings and the briefs it had received.

During the year, the panel decided that some issues should be discussed by government departments and agencies, rather than by the proponents. Therefore, it asked these departments and agencies to prepare position papers about the possible effects of the proposal on their programs, policies, and activities.

In August, a pilot funding program was set up in response to recommendtions from various public interest groups and previous panels. It was designed to help groups participate in the review. The pilot program, with specific criteria, is administered by an independent committee that reports to the Executive Chairman of FEARO. By the end of March, $325 000 had been distributed to 10 groups. This was the first time that funds had been made available to help participants prepare for the panel meetings.

***Plans for 1982-83***

The Alaska Highway pipeline panel will hold meetings in June 1982 to consider the information it requested at an earlier stage in the review. The panel is expected to make its final report to the Minister in the fall of 1982.

The Beaufort Sea panel, as a result of the guideline meetings, felt there was a need to improve the understanding of the environmental assessment review process. It will hold community meetings during the remainder of 1982 to discuss the review and the guidelines and help prepare the communities for participation in the final meetings.

At the beginning of the year, some $292 500 will be awarded to help participants continue their preparations for the review. Additional funds may be available during the year.

# Department of Fisheries and Oceans

***Responsibilities***

The Department is responsible for fisheries research and management throughout the Canadian North. It draws its authority from several Acts, including the Fisheries Act. The Department implements oceanographic and hydrographic programs and co-ordinates ocean policies and programs of the federal government.

Arctic fisheries management is the responsibility of regions, the Pacific (Yukon) and the Western (NWT). Fishery Officers in the territories carry out enforcement and inspection programs; to a limited extent, they also fulfil fisheries management functions. Regional headquarters in Vancouver and Winnipeg provide professional assistance for fisheries and fish management. Departmental headquarters in Ottawa provides input to the policy development process. The Arctic Biological Station at Ste. Anne de Bellevue, Quebec, provides a marine biological research service to northern fisheries programs.

## Fish Habitat Management Branch (Headquarters)

***Responsibilities***

The Branch participates in policy development for fish habitat management and protection in the Arctic. It represents Headquarters on a number of interdepartmental committees concerned with northern development and environmental protection.

***Review 1981-82***

Staff provided advice on the Department's position on proposed hydroelectric developments on the Slave and Liard Rivers. The Department noted that frequent, uncoordinated changes to the flow of these rivers could adversely affect fish and wildlife of the lower Mackenzie River. The Department commented on the need for stronger federal powers to address this potential problem.

Placer mining in the Yukon continued to be of real concern to fish habitat managers and the matter was discussed with senior officials of DIAND.

Departmental staff also contributed to the work of the Beaufort Sea Task Force, whose recommendations led to the formation of the Beaufort Sea Office. The Branch seconded one of its staff to the Office for a six-month period.

Further contributions were made to the Lancaster Sound study and to the completion of the Green Paper. Staff also participated in preparing several policy papers related to Northern Development.

***Plans for 1982-83***

A departmental habitat management policy will be completed during 1982. The policy will be fully applicable to the North as well as to the rest of Canada. Consultations on this policy will be held in the Northwest Territories and the Yukon, and with DIAND.

The Branch will continue to focus on problems associated with development in the Beaufort Sea — Mackenzie Delta area. It will direct attention to DIAND's land use policy and the Department's role in implementing the policy. The Branch will particularly stress identifying critical habitat areas and determining what can be done to protect them. Discussions with Parks Canada will be pursued in order to assist in developing a policy on marine parks, particularly in the North.

## Resource Research Branch (Headquarters)

***Responsibilities***

The Branch participates in developing policy on scientific issues in the Arctic. It facilitates the co-ordination of DFO's Arctic fisheries research programs and serves as a focal point for advice on the protection of endangered species.

***Review 1981-82***

Branch staff co-ordinated scientific input into a departmental review of the status of the bowhead whale. The Branch also provided input in the development of a policy position on aboriginal hunting, and provided scientific expertise to the Committee on Whales and Whaling, which independently reviewed the bowhead question.

As part of Canada's commitment to the Scientific Committee of the International Whaling Commission, the Branch organized a departmental review of past Arctic whale research activities and made future plans. A summary report is being prepared.

Branch staff also contributed to the clarification of Canada's position on listing species under the Convention on International Trade in Endangered Species (CITES); they played an active role in Europe in attempting to ensure that only legitimately endangered species are listed. Staff also provided input to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), a group that includes government and non-government representatives from across Canada. In 1981, the Ministers of Fisheries and Oceans, and Environment, officially declared the bowhead whale to be an endangered species.

### *Plans for 1982-83*

Departmental policy on whale hunting in the Arctic may be developed in the upcoming year; the scientific basis for this policy will be an essential component.

More effective mechanisms for co-ordinating research programs are being developed. Scientific statements on the implications of oil and vessel traffic to Arctic fish and marine mammals will be completed. These statements will serve as the base for the Department's sectoral policy statements.

## Northwest Territories

### *Review 1981-82*

#### *Fisheries Resources*

Fishery management field activities involved investigations into both inland and coastal (anadromous) fisheries.

Biological data were collected on commercial and sport fishing resources, as well as on subsistence (domestic food) fish resources.

The Department continued to monitor the commercial fisheries on Great Slave Lake, Victoria Island (Cambridge Bay area) and along the Keewatin coast. It also carried out stock assessment studies on Great Slave Lake whitefish populations and Wellington Bay (Victoria Island) anadromous Arctic char populations. Preliminary work was also done in the Tuktoyaktuk area, on the feasibility of commercially harvesting herring for their roe, and the experimental fish weir (Saputit) project at Jayco River (Victoria Island) was concluded.

Monitoring sports fishing activities included counting fish taken at Polar Lake in the Hay River area, at Gordon and Nueltin Lakes, at Tree River and High Arctic Sport Fishing Lodge (Victoria Island) and at Lake Hazen (Ellesmere Island). In addition, Contwoyto and Upper Cabin Lake in the Yellowknife area were surveyed to assess their potential for sports fishing. Various domestic fishing camps were visited to obtain information relating to the fish caught.

Marine mammal field activities included monitoring of the Mackenzie Delta beluga hunt. The Department hired six local Inuit under contract to observe the hunt in camps between Shingle Point and Tuktoyaktuk. Over 75 per cent of all hunters were interviewed for data on numbers of animals caught, lost and the hunting effort required. Landed whales were also biologically sampled.

Aerial surveys were conducted on beluga in Cumberland Sound during early August, and also along the west coast of Hudson Bay from Fort Severn (Ontario) to Rankin Inlet (N.W.T.) in July and from Repulse Bay (N.W.T.) to the Nelson River (Manitoba) in August.

#### *Fish Habitat*

Departmental staff participated in a number of studies with the broad objective of defining the anadromous and freshwater fisheries resources of the south Beaufort Sea area and the extent to which these resources could be affected by the development of hydrocarbon resources in the region.

Studies to describe the fish resources of Tuktoyaktuk harbour were begun. In addition, studies were begun of two watersheds draining into the harbour to determine the extent to which anadromous coregonids and other fish species use them as feeding, spawning, rearing and wintering areas.

Section personnel also participated in a joint DFO-DIAND program to monitor the effects of effluent from the Nanisivik lead-zinc mine on Baffin Island. A similar monitoring program was carried out at the Polaris Mine on Little Cornwallis Island, which began operations in late 1981.

The group began a project to enable an inventory of fish and marine mammals in the Beaufort Sea area to be made. Susceptibility of marine habitats to man-made disturbances will also be investigated. Land-use mapping surveys were done under contract of a number of Arctic watersheds.

Staff participated in reviewing several major industrial projects in the region and prepared policy and guidelines on the use of explosives in the waters of the N.W.T. and draft guidelines for dredging projects.

Research on the physical, chemical and biological processes of fresh and Arctic waters, and how man's activities alter aquatic habitats, continued through the year.

Problems associated with the presence of natural uranium and its degradation products in lakes, streams and in the Saquaqjuac estuarary are being studied.

Samples of freshwater fish, estuarine fish, crabs, kelps, seal, walrus, and polar bear have been obtained to determine the accumulation of uranium series elements in the food chain. Sediment cores of freshwater lakes and the Saquaqjuac estuary are being analyzed for natural radionuclides, bomb fallout nuclides, and global lead and mercury fallout.

Freshwater phytoplankton and zooplankton research was done on control and nitrogen and phosphorus fertilized lakes at Saquaqjuac. Samples of lake zooplankton from the arctic islands and mainland NWT and Yukon are being used in zoogeographic studies.

#### *Industry Services*

Four out of five registered plants were formally surveyed in the N.W.T. to determine their ability to maintain certification status. More than 180 plants were inspected to monitor their compliance with operational requirements.

In addition, more than 600 microbiological analyses were performed on domestic fish.

Of approximately 80 commercial fishing vessels, 33 were inspected. Approximtely 1.27 million kilograms of fish produced in the N.W.T. were subject to inspection in 1981. A total of 1,683 samples of aquatic biota taken in 1980 and 1981 from an N.W.T. mine site were analyzed, with 14,150 analyses completed for mercury, arsenic, selenium, lead, cadmium and zinc. Five vessels were surveyed to determine their ability to meet new vessel certification requirements under the Quality Improvement Program.

Major activities in fisheries development included the following:

- A project was carried out to test the feasibility of a gillnet fishery to harvest Pacific herring in the Mackenzie Delta area and to determine the time of roe maturity from that species.
- The use of lake whitefish and broad whitefish as possible sources of caviar production was investigated. Enough data were obtained to indicate that broad whitefish is an appropriate source of roe for a high-quality caviar product.
- The feasibility of a modified saputit (fish weir) method for harvesting arctic char was successfully demonstrated. Local Inuit fishermen participated in the project, which was carried out on the Jayco River on Victoria Island.

### *Conservation and Protection*

The Northwest Territories are divided into five sub-districts, with headquarters in Yellowknife. Fishery officers were involved in the enforcement of the Fisheries Act and regulations. They were also engaged in collecting harvest data, conservation education, habitat protection measures and other activities of the Department in the North. Staff participated in five interdepartmental and Territorial Government committees where DFO terms and conditions were developed and incorporated into licences or permits issued by other agencies. Staff also participated in eight advisory committees on the use of fish resources.

### *Plans for 1982-83*

Monitoring of the commercial fisheries on Great Slave Lake, in the Cambridge Bay area of Victoria Island, and along the Keewatin coast will continue. As well, staff will assess the stocks of whitefish in Great Slave Lake and anadromous Arctic char in the Cambridge Bay area. Potential for a Pacific herring roe fishery along the coastal area of the Mackenzie Delta and commercial exploitation of freshwater species within the delta area will be assessed. Data on various sports and domestic fisheries will also be collected. Monitoring of marine mammal activities, including beluga, narwhal and walrus, will continue.

Detailed studies will continue of the fisheries resources of Tuktoyaktuk harbour and two freshwater tributary systems, as will the study to reaffirm migration routes, timing and location of spawning areas in the Mackenzie River.

Resource inventory and habitat mapping for the Beaufort Sea area will be expanded to cover the Northwest Passage and Hudson Bay/Hudson Strait. A project to assess how proposed water resources development in the Mackenzie River basin will affect fish, marine mammals and their habitats will be initiated. Arctic land use surveys of the southern portion of Victoria Island and the northeastern Keewatin district will be carried out.

Research activities will include: studies of photosynthesis and primary production in Cardigan Strait polynya; reconnaissance of potential research areas in Barrow Strait — Lancaster Sound for long-term studies on near-shore, benthic fishes and on Arctic cod; collection of tissue samples of narwhal, beluga, walrus, ringed seal and bearded seal for biosystematics investigations and development of suitable biochemical methods for stock identification; biochemical genetic investigations of population structure of inconnu in Great Slave Lake and on coregonids in Mackenzie Delta; experiments on phosphorus and nitrogen additions to Saquaqjuac lakes and on the effects of exploitation strategies on Arctic char and lake whitefish; continuation of investigation of stocks of lake whitefish in Great Slave Lake; experimental studies on metals and radionuclides in fresh and estuarine waters and food chains; and, the monitoring of and historical research on long-range atmospheric pollution (acid rain, global fallout of lead and mercury) and their effects on fish.

In addition to the maintenance of existing regulatory requirements, a comprehensive program to improve the quality of fisheries will be continued in the N.W.T. Landing sites will be surveyed to obtain a data base on the extent to which they conform to cleanliness and operational requirements.

The Saputit weir fishery project will be continued at the Jayco River location and an automated winter fishing system will be further tested on Great Slave Lake. A trawl or trap-net fishing project is planned for selected areas of Great Slave Lake and other smaller lakes to test the feasibility of harvesting whitefish and pickerel with a minimum loss of sport fishing species.

In the area of field services, greater emphasis will be given to enforcement of regulations, the inventory of the harvests and local implementation of management programs. To accomplish this expanded level of activity, biologists will be added on a full-time basis to offices at Frobisher Bay and Hay River.

## Yukon Territory

### *Fisheries Resources*

The Department manages freshwater fish as well as anadromous species in the Yukon Territory. Fishery officers are involved in day-to-day management of the resource and in activities such as collecting fishery catch statistics, setting and enforcing regulations and habitat management. A small biological unit undertakes programs designed to aid in the establishment of regulations and long-term management strategies.

### *1981-82 Programs*

Most of the programs undertaken in 1981-82 were a continuation of those undertaken in previous years.

A salmon counting weir on the Klukshu River, a tributary of the Tatshenshini River (Alsek system) was in operation for the sixth consecutive year to count the number of sockeye, chinook and coho using this stream. In addition, salmon were sampled for length, weight, sex and age, and a small project was carried out to estimate the number of fish caught by anglers. A total of 20 348 sockeye, 2 113 chinook and 1 170 coho passed through the weir between May 22 and October 14. Anglers caught an estimated 566 sockeye, 183 chinook and 82 coho. Restrictions on the Indian Food Fishery limited the 1981 catch.

The commercial catch of salmon in the vicinity of Dawson was sampled as in previous years for length, weight, sex and age. Subsistance fisheries were monitored along a 480 km stretch of the Yukon River between Dawson City and Carmacks, and on the Pelly River between the Yukon River and Pelly Crossing.

Chinook salmon passing through the Whitehorse fishway was monitored again, with the 1981 total being the second highest on record.

A survey of Yukon lakes was undertaken in 1981 to provide productivity estimates to assist in establishing regulations for the sport and commercial fisheries. The results indicated that Yukon lakes are generally of low productivity and could be overfished if not carefully managed.

*Proposed 1982-83 Programs*

The Klukshu river program is expected to continue in 1982 with improvements in the methods used to estimate the number of fish caught by anglers. The Department also plans public relations associated with the "creel census". An information leaflet for public distribution will provide some background on the salmon resource of the area. New sport fishing regulations for the Klukshu and nearby streams will be operating in 1982.

The chinook salmon passing through the Whitehorse fishway will again be monitored in 1982.

The largest program to be carried out in 1982 will be the Yukon River Basin Study. The study program is being carried out jointly by the Governments of Canada, British Columbia and Yukon Territory. The objective is to institute a planning framework within which to evaluate potential development alternatives in the Basin. The 1982 investigations will include tagging salmon to determine their spawning locations, estimate the fish population and the size of the commercial fishery catch, studying fishery productivity on selected lakes, and performing bioassays on the effects of placer mining sediments on grayling. It is also proposed to evaluate a habitat categorization model under development by the Yukon Territory.

### Arctic Biological Station

***Review 1981-82***

Further studies of the distribution and abundance of ringed seal breeding lairs in the fast ice of Prince Albert Sound, western Victoria Island were carried out. The role of the arctic fox as a predator of whitecoated pups was also studied. The use of a trained dog (a Labrador Retriever) to detect breeding lairs was demonstrated to biologists from the Alaska Department of Fish and Game. The Biologists received training in using and handling for this purpose. In early July, a small hut was erected on the west side of Dundas Harbour, southeastern Devon Island, to serve as a base from which to study ringed seal behaviours, particularly in relation to predatory polar bears.

The behaviour of white whales was studied in the clear, shallow waters of Cunningham Inlet, northern Somerset Island, where about 1500 whales congregate each summer. This was the second year of a long-term project that will try to explain the importance of these areas to the survival of the white whale. As a further part of the white whale study, a detailed aerial survey was made of Barrow Strait, Lancaster Sound and Prince Region Inlet, using a helicopter supplied by the Polar Continental Shelf Project. More studies of behaviour were done and photographs taken of representative groups to provide information on the proportion of calves, immatures and adult animals.

One scientist spent the month of August teaching a marine ecology course to students of the Renewable Resources Training Program of the Department of Education, Government of the Northwest Territories. This course was conducted from the DFO field camp on the southeast coast of Baffin Island between Frobisher Bay and Cumberland Sound.

Biological oceanographic activities included further studies of inshore ecology at the head of Frobisher Bay. The studies particularly focused on the composition of the ice biota, detrital fallout, plant production, the vertical distribution of zooplankton and the energy-biomass relationships of macrozooplankton. Studies of how petroleum and the chemicals used to dispose it affect bacteria continued. These studies were part of the Baffin Island Oilspill Study (BIOS) being carred out at Cape Hatt in Eclipse Sound, northern Baffin Island.

***Plans for 1982-83***

Early in the year a study will be made of how ringed and bearded seals in southern Prince of Wales Strait are affected by disturbances. The Strait is perhaps the least-known section of the proposed tanker route through the Northwest Passage. Later, a field camp at Dundas Harbour, southeastern Devon Island, will be used to observe the behaviour of ringed seals in an attempt to devise a method of capturing animals live for possible radio-tagging.

The behaviour and vocalizations of bearded seals will be studied at Cunningham Inlet, northern Somerset Island and following the break-up of the fast ice, behavioural studies will be continued on the white whales that congregate in Cunningham Inlet.

The Biological Oceanography Program will continue its coastal ecology study at the head of Frobisher Bay, making full use of the Ikaluit Research Laboratory to process and analyse samples. Projects will include studies of the under-ice biota, detrital fallout, the production of phytoplankton and seaweeds, the dynamics of zooplankton, and the biochemistry and energetics of carnivorous macrozooplankton, several species of which are eaten directly by top-level predators such as sea birds andseals. Studies on the effects of petroleum and petroleum-dispersant mixtures on bacteria will be continued in conjunction with the BIOS project at Cape Hatt.

### Native Affairs Branch

*Responsibilities*
Formed in April 1982, the Ottawa-based Branch is concerned with native-related matters which impinge on the DFO mandate. It is the focal point for developing policy initiatives and advice on the interpretation of native hunting and fishing rights. The Branch plays a lead role in consultations with natives, negotiating fisheries provisions associated with land claims, and co-ordinating departmental native employment and training programs on a national basis.

***Review 1981-82***
With respect to operations in the Northwest and Yukon Territories, Branch negotiators participated in negotiations on agreements-in-principle with the Committee on Original Peoples Entitlement, the Council of Yukon Indians, and the Inuit Tapirisat of Canada. Numerous position papers and briefing documents were prepared for use in discussions on native rights in both the Territories and the Provinces. Native "desks" were established in the regions to facilitate two-way communications on the various issues.

***Plans for 1982-83***
The Branch will continue to be involved in claims negotiations being conducted with the Nishga Tribal Council, affecting Northern B.C. fishery resources. The Branch is also expected to become involved with negotiations of the DENE Claim (Western N.W.T.). The Constitutional Conference on native rights, the N.W.T. plebiscite results regarding its division and the wishes of the native people to be more involved in fisheries and marine mammal management and research are expected to generate requests for information and advice.

### Ocean Science and Surveys (OSS)

***Responsibilities***
Oceanographic investigations in the Arctic relate directly to legislative responsibilities in accordance with the Arctic Waters Pollution Prevention Act and Ocean Dumping Control Act regulations. A major responsibility is the determination of physical oceanographic conditions in relation to drilling permits.

OSS provides oceanographic information and advice to departments such as DIAND, EMR and DOE relating to the regulatory process, the review of industry proposals and related environmental studies. It participates in the conduct and/or management of government/industry marine environmental programs.

Hydrographic surveys are conducted in northern waters through the Canadian Hydrographic Service (CHS). The surveys focus on potential tanker routes. CHS also produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern waters.

### Institute of Ocean Sciences (OSS)
### Sydney, British Columbia

***Review of 1981-82***
A survey of the Eurasian Basin, known as EUBEX was carried out in co-operation with the University of Washington, in amodified form during March/April 1981. An airborne CTD (conductivity-temperature-depth) survey covering the area of the ice edge north of Spitsbergen to 85°30'N and from the Greenwich meridian to 32°E was carried out from Longyerbyen and the FRAM III ice camp. These measurements showed detailed features of the Atlantic water entering the Arctic Ocean and its cooling as it travels along the shelf break north of Spitsbergen. This current is the main inflow into the Arctic Ocean and affects the entire Basin.

An observational program conducted in the Beaufort Sea included the installation of current meters, which were recovered later in the year. Observations were made west of the U.S. border in co-operation with the U.S. Coast Guard, and the entire survey formed part of the second Beaufort Sea Winter Ice Experiment, with other components being undertaken by Dome Petroleum and the Atmospheric Environment Service (DOE). CTD sections were taken extending from the deep basin waters to the edge of the landfast ice over a 750 km stretch of coastline. In all, 60 CTD profiles were acquired and 7 moorings were deployed and recovered. Measurements verified the presence of a westward current jet overlying the continental slope.

Data reduction from the Polynya Experiment is now essentially complete. The measurements of eddy heat flux made within the growing (atmospheric) convective boundary layer agree well with existing data taken elsewhere under strongly advective conditions on much larger physical scales. The oceanographic measurements indicate a source of sensible heat in the form of warmer water brought to the surface during high-current periods of the tidal cycle.

The expected year-round use of the Northwest Passage by ice-breaking tankers has stimulated research effort in that area. A great deal of logistic preparation and instrument testing has preceded a major field program planned for the spring of 1982. A complementary industrial survey will be undertaken and the data will be integrated.

Work proceeds on deep oil well blowout studies. The results of laboratory measurements on gas hydrate formation on rising gas bubbles have been incorporated into a mathematical model of a complete bubble plume. IOS is involved in an international co-operative study concerned with the subsea containment and control of oilwell blowout being undertaken in 1982 at the Massachusetts Institute of Technology.

The Institute developed an airborn CTD survey system suitable for use in a Twin Otter aircraft for the EUBEX and Beaufort Sea Surveys. This system has proven very successful. Another current development is a helicopter CTD system designed for use from a Bell Model 206 or similar machine. Construction is proceeding and the system will be used next spring in the Northwest Passage. Work has begun on the design of Mark II of the "salinity sucker", a device for measuring ice crystal content and super-cooling in seawater.

The Practical Salinity Scale, 1978, developed at IOS, has now been officially adopted by the International Association of Physical Sciences of the Ocean (IAPSO), the International Council for the Exploration of the Sea (ICES) and the Scientifica Committee on Oceanic Research (SCOR). The scale will be used for reporting oceanographic data after January 1, 1982. Tables of the new Scale were produced for publication by UNESCO.

*Plans for 1982-83*

An estimate based on results from the Polynya Experiment will be prepared of heat transfer rates through areas of open water in the Arctic and Antarctic. Also to be undertaken is an improved description of winter oceanographic conditions north of Svalbard. The description will be based on the analysis and interpretation of data collected during the EUBEX survey in 1981. There will also be an improved description of the currents under winter pack ice, based on the results of the Beaufort Sea Winter Ice Experiment.

The development of a "salinity sucker" for measuring salinities in the presence of ice crystals will be completed, along with an international experimental program to assess the feasibility and usefulness of constructing a device for the containment of a subsea oilwell blowout, with IOS playing a major scientific advisory role. Work will continue to complete development of a temperature/conductivity chain for use on moorings and adaptation of an airborne CTD profiling system for use from helicopters.

An overview/scenario of Beaufort Sea industrial development projections and plans to the year 2000 will be prepared.

IOS will also compile, evaluate and store chemical oceanographic data for the Beaufort Sea and N.W. Passage and other priority Arctic areas.

The Institute will begin to compile and assess Arctic biological oceanographic data (benthic, planktonic) in order to assess suitable formats for storing biological information.

**Bedford Institute of Oceanography (OSS)**
**Dartmouth, Nova Scotia**

***Review of 1981-82***

Although open areas (polynyas and leads) and very thin ice cover only a small fraction of the Arctic Ocean in winter, they account for a major portion of the sea's surface heat loss. The Institute's turbulence structure and surface heat flux measurements obtained from the 1980 Dundas Island polynya experiment are being compared with the meteorological and oceanographic data obtained by other groups in order to derive empirical expression for surface heat fluxes valid under these extreme conditions.

Studies of the heat balance and surface heat flux at Ocean Weather Ship Bravo in the Labrador Sea are continuing. The 20-year time-series data are being used to compute the year-to-year variations in the monthly heat content of the upper water column and how these relate to surface heat fluxes and residual horizontal advection.

An understanding of iceberg dynamics is important in assessing the safety of oil drilling and production activities in iceberg-infested waters. During the past year, a method has been developed to automatically determine the best possible choice of air and water drag coefficients to represent an observed drift track using wind and current data. Towing forces and other refinements have been added to the model; it has been used to investigate possible effects of towing on existing tracks.

Analyses of deep convection mechanisms in the Labrador Sea have been completed. These show that the dynamics of Labrador sea water formation are nearly identical to those of Mediterranean water formation in spite of the fact that the latter extends to the ocean bottom and takes place over horizontal scales approximately half as large as the former. The large scale circulation of the Labrador Sea and adjacent waters of Baffin Bay are being studied by means of a diagnostic numerical model incorporating realistic data sets.

Studies of the temperature, salinity and velocity fields in and near the Labrador Current are continuing, as are studies on the age and origin of Baffin Bay Bottom waters. Recent determination of the age of bottom water based on helium-tritium measurements indicates it to be about 500 years old. Consistent with the low tritium concentrations, there is no detectable cesium-137 in the bottom water.

Work continued during the year on the long-term monitoring project of the Labrador Current at Hamilton Bank, as detailed in previous reports. A report containing illustrations of the first two years of data is in preparation.

Studies of the impact of freshwater on the water masses of the coastal region of Atlantic Canada have been implemented. Water masses entering the highly productive fishing grounds of eastern Canada are primarily of northern origin with freshwater entrainment from local run-off and melting sea ice. This seasonal pulse of freshwater is thought to play an important role in the biological processes and productivity of the region.

Stable oxygen isotope ratios of selected water samples collected during the Swedish Arctic Expedition (YMER 80) between Svalbard and Northeast Greenland have been used to assess the importance of sea ice meltwater to the excess alkalinity observed in the surface layer. In addition, oxygen isotope data collected in the eastern Canadian Arctic will be used to evaluate the extent of glacial meltwater contribution in Melville Bay and to examine year-to-year variations in sea ice turn over.

The processes of carbon dioxide assimilation by the oceans are important in view of the worldwide buildup of atmospheric $CO_2$ from fossil fuel combustion. During the past year, BIO research has focused on the effect of sea ice on both the near surface alkalinity in the water column and on the role of sea ice in the transfer of $CO_2$ between ocean and atmosphere as measured in Baffin Bay.

Considerable advantage has been taken of the opportunities to carry out oceanographic measurements in the Arctic Ocean through the FRAM III expedition. The vertical distribution of nutrients and some fission-product radionuclides has been measured in the hope that this information might help to clarify how the ocean water layers circulates in the area. Measurements have been made to determine the effects of sea/ice on carbon dioxide transfer at the ocean/atmosphere interface and to construct an alkalinity budget for the Arctic Ocean. This work has benefited from collaboration with Swedish scientists.

Investigation of the nature of the hydrocarbons seeping from the sediments on the Baffin Island Shelf continued, as did surveys of other areas for these sediments and for the baseline or ambient concentrations of petroleum hydrocarbon residues. Investigations of the incidence of methane and other volatile hydrocarbons have been conducted in Baffin Bay and on the Baffin Island Shelf during the last few years to assess their value as prospecting tools in the Arctic marine environment. A particular area of focus in this respect has been the environs of the existing seep off Scott Inlet.

Results from the 1980 marine ecology cruise to the eastern Canadian Arctic (Labrador Sea, Baffin Bay, Lancaster Sound) were highly satisfying. On the basis of this work, the linearity of the relationship between phytoplankton assimilation number and temperature in the Arctic temperature range has been established. The temperature dependence does not appear to be any stronger than it is attemperate latitudes, a result that is not consistent with previous work.

***Plans for 1982-83***

Most of the work described above is ongoing and will continue during 1982-83, including the requirement to analyze and interpret the data collected during earlier years. The gradual redeployment of resources in the direction of Arctic research, will continue in all disciplines, and present plans anticipate that work in the eastern archipelago, especially Lancaster Sound, and in Baffin Bay and the Davis Strait region, will continue to expand.

Other plans call for research in the Hudson Strait region, pertaining to the fisheries of the Labrador Shelf. These fisheries are strongly influenced by pulses of nutrient-rich water that leave the Hudson Bay/Ungava Bay region. A joint marine ecology/chemical oceanography cruise is planned for 1982 to investigate the oceanography of the area, followed by land-based studies in succeeding years. In 1983, marine ecologists of the region will participate in CESAR (Canadian Experiment to Study the Alpha Ridge) utilizing an ice station to study plankton-benthic linkages in the Arctic Ocean.

## Bayfield Laboratory for Marine Science and Surveys (OSS)
## Burlington, Ontario

***Review 1981-1982***

The Oceanographic Division of the Bayfield Laboratory for Marine Science and Surveys (BLMSS) began a long-term program to monitor ocean conditions in a section of the Northwest Passage in March/April 1981. Field work was carried out on the stable winter ice cover, from which temperature and salinity profile measurements were made for a regional survey of water structure. A 29-day flow calibration experiment using moored current meters and pressure recorders was employed to study the interrelationships of tidal heights and tidal currents and to understand net transport and pressure differences across the strait. Twin current meter moorings (and pairs of pressure recorders) were placed for year-long measurement of flow to determine seasonal and year-to-year differences, particularly the difference between ice-free and ice-covered conditions. A notable fnding was evidence of coastal upwelling and retarded ice growth along the south shore of Barrow Strait and east shore of Peel Sound.

A limited number of biological and chemical observations were made, including bottle casts for phytoplankton and nutrient samples, net hauls, and ice bottom scrapings. The project contributes to a Northwest Passage Oceanography Program under the aegis of the Subcommittee on Arctic Oceanography (SCAO) of the Canadian Committee on Oceanography. It is supported by the Polar Continental Shelf Project of Energy, Mines and Resources and the Canadian Hydrographic Service.

A sea ice radar program was carried out in April 1981 to collect data in order to understand the interaction of low incident angle radar signals with sea ice. Once this interaction is understood, ice can be classified by type from a ship, stationed as much as five to six miles distant from the ice.

During the 1981 Barrow Strait survey, a prototype Arctic current profiling system (G-UMPS), designed and built by BLMSS, was successfully tested. The system is used for unmanned recording of water temperature and salinity, current velocity and direction, using gyroscope technology. A small submarine (SEAL — developed under contract) used to transfer lines under the ice between ice holes, and a new "inverted-V mooring" system were also successfully field-tested.

Results of earlier Hudson Bay oceanographic data collection programs undertaken by BLMSS were presented, including the physical and biological oceanographic properties found in and beneath freshwater plumes under an ice cover; tidal-induced variation in salinity distribution in a narrow estuary (Chesterfield Inlet); the variability of oceanographic parameters in Hudson Bay; the present and future circulation in James Bay; and the use of stochastic-deterministic modelling for estimating tides in branched estuaries.

Information gained from these northern oceanographic studies is used in reviewing applications for resource exploration permits, environmental impact statements and contingency plans, preparing response plans, and for assessing areas of marine sensitivity relative to potential development.

### *Plans for 1982-83*

Considerable effort will be made during the 1982 field program in Barrow Strait to determine water property characteristics throughout the study area. Temperature and conductivity data will be used not only to develop the physical characteristics of the different waters entering Barrow Strait, but also to determine the degree of geostrophys in the flow and to identify significant processes such as coastal upwelling. Year-long current and water level instruments will be retrieved and redeployed. Biological and chemical observations will include sampling for nutrient chemistry, phytoplankton analysis and zooplankton for a better understanding of the distribution of planktonic organisms.

Field tests on a variety of instrumentation modified for operating under arctic conditions will be undertaken including a zooplankton closing net and water sampling bottle, adapted for use through an augered ice hole and a portable A-frame for through-the-ice mooring operations. Changes made to the Anderaa current meter to increase the sensitivity of salinity measurements by a factor of seven will also be field tested. These developments are significant contributions to the interpretation of ocean processes in Arctic channels.

## Champlain Centre for Marine Science and Surveys (OSS) Quebec, Quebec

### *Plans for 1982-83*

The Centre will embark on its first northern field program in 1982 by carrying out the initial part of a two-year study of the freshwater plume of the Great Whale River. This joint physical and biological oceanography project in co-operation with McGill and Laval universities, will concentrate on the effects of the presence of a solid ice cover on the growth of the plume, and reduction of turbulence and entrainment. The availability of light and nutrients for phytoplankton bloom will also be studied, as well as the cell physiology of phytoplankton populations both in the ice and in adjacent waters. The second half of the project will be conducted in March 1983.

## Marine Sciences and Information Directorate, OSS

### *Responsibilities*

The Directorate participates in formulating national and international policy for OSS Arctic involvement. It provides representatives to interdepartmental committees on northern development and Arctic marine science, stores oceanographic data collected in the Canada North, and disseminates northern oceanographic data in processed form. The Directorate collects, digitizes, analyzes and publishes instrumental wave data and co-operates with exploring oil companies in gathering wave climate data on offshore drilling sites. It also functions as the departmental focal point and responsibility centre for scientific and technical publications.

### *Review of 1981-82*

The Directorate continued to provide the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice. In addition, the Ocean Science Affairs Branch represented OSS on the Interdepartmental Environment Review Committee (IERC) which dealt with approvals for exploratory drilling. It participated in the Lancaster Sound Workshops in Resolute and Ottawa, and provided a member of the Lancaster Sound Regional Study Steering Committee. The Branch also participated in the establishment of an Environmental Advisory Committee on Arctic Marine Transportation, the steering committee for the Government/Industry Annual Environmental Workshop held this year at Montebello, the establishment of a departmental mechanism for review of the upcoming Beaufort Sea Environmental Impact Statement and was involved in the Termpol Review of the Arctic Pilot Project.

The Branch continues to develop program proposals for Arctic oceanography.

Intergovernmental involvement included discussions with German officials on the possibility of joint polar research in oceanography under the Canada/FRG bilateral Science and Technology agreement and interdepartmental discussions on possible arctic collaboration with Japan and the U.S.S.R.

Implementation of the recommendations from the interdepartmental study on Ocean Information Services (1980) have started. A data directory (CAMDI) has been initiated for all OSS held data; it is currently being expanded to include industrial and other data in the marine environment.

In 1981, the Marine Environmental Data Service operated three wave data recorders with the Datawell buoys at Koakoak, Issungnak and Kilannak. The data return from these three installations exceeded 95 per cent.

### *Plans for 1982-83*

The Directorate will continue its role in the groups or committees noted above. It will also be involved in planning Arctic oceanography programs, the EARP Review of Beaufort Sea Production and Transportation, northern and regional land-use planning, the Environmental Studies Revolving Fund Steering Committee and the implementation of the Arctic Pilot Project (Northern Part) recommendations. Work will continue on Ocean Information Systems and the Ocean Climate Program and on the possible elaboration of joint Arctic endeavours with the Federal Republic of Germany, Japan, France, the U.S.A. and the U.S.S.R.

The Wave Climate Study will continue to support drilling activities in the Beaufort Sea, with five waverider systems for Dome Petroleum and one system for Gulf Oil. In the eastern Arctic, two systems will be loaned to Canterra Energy Ltd., for operations in the Davis Strait area.

The Directorate will continue to publish validated scientific evidence from departmental R&D programs in the North and will continue to explore with petroleum companies and their consultants the possibility of publishing results of their studies.

## Canadian Hydrographic Service, OSS

### *Responsibilities*

The Service conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern waters.

***Review 1981-82***

*CSS Hudson*, carrying five survey launches and 19 hydrographic, electronic and mechanical support personnel, was assigned to survey a deep draught (20 m) tanker corridor through an area of the Beaufort Sea known to contain pingo-like features (PLFs). The corridor is 10 nautical miles wide and approxiately 170 nautical miles in length. Launches were run 16 hours per day, and overnight the ship ran seismic and side scan coverage through the corridor. Gravity cores and grab samples were also obtained, and six current meters were recovered from the edge of the continental slope for the Frozen Sea Research Group from the Institute of Ocean Sciences. Prior to returning to Bedford Institute of Oceanography, *CSS Hudson* also undertook surveys in the eastern Lancaster Sound area.

In the easter Arctic, *CSS Baffin* carried out surveys in Fury and Hecla Straits, assisted by the Coast Guard vessel *Labrador*. *Baffin* also completed the route from Fury and Hecla Straits to Hall Beach, and in conjunction with the chartered vessel *Polar Circle* completed surveys for the approaches to Hall Beach and the route from Hall Beach to Roche Bay. In the northern part of Foxe Basin, *CCGS Labrador* completed 50 per cent of the survey of Steensby Inlet.

Coast Guard vessels, *John A. MacDonald*, *Pierre Radisson* and *Louis St. Laurent* were available to CHS on an opportunity basis and worked on the following projects: a) Labrador Coast and Home Bay horizontal control b) survey of Nanisivik wharf c) surveys of Clyde Inlet, Croker Bay and Dundas Harbour.

Several projects were completed on the Labrador Coast and the survey of Koksoak River, Ungava Bay, was also completed. With the support of the Department of Transport, a detailed survey was carried out of the approaches to Chesterfield Inlet.

The 1981 Polar Continental Shelf Project (PCSP) survey operated from a camp established on the west side of Prince of Wales Island. The group worked in conjunction with the Gravity Division of Energy, Mines and Resources and collected 9971 through-ice soundings and 1000 gravity readings in southern McClintock Channel and Larsen Sound. In the Davis Strait area, *CSS Dawson* completed the offshore multiparameter survey as far north as Cape Dyer.

In the western Arctic, four tide gauges were installed in the Beaufort Sea in support of the Hudson '81 project. Tide gauges at Cape Parry and Cambridge Bay were serviced and replaced and work continued on the development of the submersible tide gauge for Arctic use. Tidal work was also carried out in Norwegian Bay and Davis Strait.

Three new Arctic charts were produced and 32 new editions and four reprints were also published. "Sailing Directions, Arctic Canada, Volume III 3rd edition" was also published. During the year, 28 Natural Resource maps covering parts of Labrador, Hudson Bay and High Arctic were completed.

***Plans for 1982-83***

The Arctic operations in the Beaufort Sea will be a continuation of the Hudson's 1981 work in the shipping corridor. It is also planned to complete surveys south of Bathurst Island in Parry Channel. Alternatives to this program are a route survey through Victoria Strait or a survey of critical areas in Prince of Wales Strait. It is also planned to complete survey work in southwest Jones Sound and on the Labrador coast in Davis Inlet and the approaches to Nain. In Hudson Bay, surveys will also be undertaken of the approaches to Akulivik in the vicinity of Cape Smith. The PCSP group will carry out through-the-ice sounding of the entrie Prince of Wales Strait. Other arctic work will be undertaken depending upon the availability of Coast Guard vessels.

A tidal survey is planned in the Gulf of Boothia and in Jones Sound and preliminary tidal and current studies will be undertaken in Prince of Wales Strait and in Amundsen and Coronation Gulfs. It is expected that 13 new charts of northern waters will be published as well as 13 new editions and two reprints. "Sailing Directions, Arctic Canada, Volume I, 3rd edition" should also be available. In addition, it is expected that 30 Natural Resource maps will be published.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 4 119 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Protection of the Environment | 3 190 | 77.4 |
| Quality of Life | 377 | 9.2 |
| Leisure and Recreation | 361 | 8.8 |
| Economic Growth | 191 | 4.6 |

# Health & Welfare Canada

## Medical Services Branch — Yukon Region

### *Role*

The Branch's primary responsibility is to administer and deliver health care programs to all residents of the Yukon. It serves as the Territorial Health Department, with the Program Medical Officer acting as Chief Medical Officer for the Yukon Territory. The Branch co-ordinates the provision of medical and dental clinical services to remote communities.

The Medical Services Branch and the Yukon Territorial Government share the cost of providing health care. The latter administers the Health Care Insurance Plan and contributes, accordingly to a cost sharing formula, to the capital and operating costs of the health care system. A Health Co-ordinating Committee was formed during 1981 with equal representation from the Medical Services Branch and Department of Health and Human Resources, Yukon Territorial Government.

### *Facilities*

The Branch operates one General Hospital, three Cottage Hospitals, two Nursing Stations, ten Health Centres, and four Health Stations.

### *Activities Review, 1981*

Main program areas include the Child and Maternal Health Program, Tuberculosis Control, Communicable Disease Control, the School Health Program (includes School Dental Health), Environmental Health, Mental Health, Health Education (with current emphasis on the community Health Representative Program), Public Service Health, the National Native Alcohol Abuse Program, and Hospital Services.

The provision of dental services continued in 1981-82. Services to remote communities are emphasized, and are provided by dentists located in Dawson City, Faro, and Whitehorse. In addition, ten Dental Therapists in Whitehorse and one in Watson Lake provide services to the entire Yukon Territory.

The Branch continued its membership on the Yukon Water Board during 1981-82. It provided advice aimed at helping to prevent the contamination of municipal water supplies.

The Branch continued to assist and encourage medical specialists in Paediatrics, Orthopaedics, Dermatology, Ophthalmology, Rheumatology, Oncology, Otorhinolaryngology, and Internal Medicine from outside the Yukon to visit and provide clinical services at Whitehorse.

In 1981-82 the Branch continued and expanded the Health Liaison Program with the Council for Yukon Indians. This Program is designed to improve the general health of the Indian people of the Yukon.

The Community Health Representative Training Program is carried out in co-operation with the Yukon Vocational Training Centre, through the Health Education Program. During 1981-82, two trainees completed the Program, bringing to eight the number of Community Health Representatives working at the community level. Four trainees were recruited in 1981, and it is expected that they will complete their training during 1982.

The Environmental Health Program added one Environmental Health Officer to its staff during 1981-82. Environmental Health Officers worked to establish and inspect sanitation facilities in mining and pipeline campsites and carried out general health inspections at these locations. The Branch reviewed and assessed certain communities and established environmental health profiles of them.

The Mental Health Program continued to promote community mental health awareness and involvement, and to help communities respond to mental health and related social problems. To strengthen this Program, one additional Community Mental Health Nurse was added to the staff during 1981-82. Psychiatric services continue on a contractual arrangement with a Psychiatrist, who visits communities every three months. Direct services are provided to both residents and medical personnel within the Yukon.

The staffing of two Area Nursing Officer positions has provided additional assistance to field nurses and cottage hospitals. The Branch has published program guidelines specific to the Yukon Region for Public Health Nurses in the field. Regional staff have updated the Infant Feeding Guide, which is expected to be distributed in 1982.

The addition of a part-time Public Service Health Nurse served to strengthen the Public Service Health Program. A full-time Public Service Health Nurse is planned for 1982-83.

Marked development of the National Native Alcohol Abuse Program occurred in the Yukon during 1981-82. A strong Advisory Board was formed and the number of programs was increased to eight. During 1981, a NNAAP Consultant was hired, and a strong program plan was established in anticipation of an expanded National Native Alcohol Abuse Program for 1981-82. All programs during 1981-82 operated at the community level.

The Whitehorse General Hospital is an accredited 120 bed acute care facility. It provides services in medicine, surgery, paediatrics, obstetrics, gynecology, psychiatry, pharmacy, radiology, physiotherapy, as well as emergency and laboratory services. The Hospital is a resource and referral centre for all health facilities in the Yukon. During 1981-82, it extended its programs by providing a comprehensive Parental Nutrition Program and a Home Haemodialysis Program. The Dietary Department provided consultative services to the Yukon Correctional Institute and the Macauley Lodge, and the medical and radiology staff have initiated continuing education in preparation for the use of an Ultra-sound Unit. This Unit will be in service in 1982-83.

*Maintenance and Construction*

A new Health Centre at Haines Junction was completed during 1981-82, and the Nurses' Residence at Haines Junction was renovated. Other work at Regional Headquarters enabled the consolidation of Administrative and Program staff. Renovation of the Laundry Department of the Whitehorse General Hospital was completed. Planning for a new Nurses Residence for Carmacks was started; construction will begin in the summer of 1982.

## Northwest Territories

### *Roles*

As in the Yukon Territory, the Medical Services Branch is responsible for providing acute treatment care and preventive health services to the population of the Northwest Territories, except in Yellowknife, Hay River and Fort Smith. In these centres, the Territorial Department of Health provides acute treatment care. That Department is also responsible for administering the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The N.W.T. Government, under a contractual agreement, provides the Medical Services Branch with support services in finance and administration.

### *Facilities*

In the Northwest Territories, the Branch operates four hospitals — Frobisher Bay General (35 beds), Inuvik General (55 beds), and the cottage hospitals at Fort Simpson and Rae-Edzo. In addition, the Branch operates 39 Nursing stations, 8 Health Centres and a number of Health Stations. The Nursing Stations are particularly well equipped. They provide treatment and public health services through a staff of Nurse Practitioners who, apart from their basic RN qualifications, have taken training in public health and mid-wifery. They also have expertise in diagnosis and treatment. Physicians from the Base Hospitals visit these Nursing Stations regularly.

A number of universities, including McGill, Manitoba, Alberta and the Clarke Insitute of Psychiatry in Toronto, provide specialist services.

Private and government dentists, as well as dental therapists provide dental service to N.W.T. communities. Dental therapists receive their training at the Branch's School of Dental Therapy in Fort Smith.

### *Activities Review 1981-82*

The Branch decided to begin discussions with the N.W.T. Government and the Inuit Tapirisat of Canada on a possible contractual arrangement under which the N.W.T. Department of Health would operate the Frobisher Bay General Hospital. This arrangement would see the hospital operating under a Regional Board of Management, as opposed to the present Hospital Advisory Board. The Hospital was re-accredited by the Canadian Council on Hospital Accreditation in August 1981.

The Inuvik General Hospital Board continued to assume increased responsibility for operating that facility. A restructuring of the Advisory Board was completed in March 1982. The reorganization of the Inuvik General Hospital is now essentially complete with hiring of a Medical Programs Officer, a Finance and Administration Officer, and a Hospital Administrator.

The likelihood of the implementation of large-scale resource development projects in the Western Arctic, with their attendant major work forces, has indicated the need for Medical Services Branch involvement in the project planning process. Regional Branch officials are working with the Department of Indian and Northern Affairs in this context.

Preliminary studies have also been completed on the future role of the Inuvik General Hospital in view of this expected resource development. The N.W.T. Territorial Council Health Services Study of the Inuvik Region will be completed in April of 1982.

A task force on Health Services and Policy Co-ordination, with representation from the N.W.T. Government, the Department of Indian and Northern Affairs and Health and Welfare Canada, is reviewing the recommendations of two health studies covering the central Arctic and Keewatin. The Task Force will report its findings in the fall of 1982.

The restructuring of the Tuberculosis and Chronic Disease Unit in Edmonton has been completed with the appointment of a Medical Director. The Tuberculosis Manual has been completed and distributed to all field units. Tuberculosis rates continued to decline during 1981.

The Medical Services Branch has taken a number of initiatives to encourage native people to become involved in the health service. For example, a number of native persons have been trained through the Northern Careers program, and a liaison worker with the Dene Nation has been hired in Yellowknife. The Branch is also continuing to encourage native groups to participate in various activities of the region including Zone Directors' Conferences.

The Dental Health Treatment Program, except in those communities having either a resident dental therapist or a preventive program, continues to remain oriented to treating emergency cases.

The Community Health Representative Program in the N.W.T. has been curtailed because of a lack of funding. Six major projects within the National Native Alcohol Abuse Program were operating in the N.W.T. during 1981.

*Maintenance and Construction*

The Department of Public Works has surveyed all hospitals and other buildings associated with providing medical care in the Northwest Territories. Many of these facilities need to be replaced, and the Department has worked to ensure that the present buildings have been renovated or repaired so that they are safe for patients and staff.

The nursing station at Holman Island was completed in the spring of 1982.

The Cape Dorset Nursing Station will be completed in the summer of 1982.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 76 584 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 76 584 | 100.0 |

# Department of Indian Affairs & Northern Development

Eskimo artist preparing a stone block. This block is used in the production of the famous Eskimo prints.

**Northern Program**

***Responsibilities***

Northern Affairs program activities include the management of northern resource development, the protection of the environment, the preservation of native languages and cultures, and the political evolution of the northern territories.

**Policy and Programming Branch**

Northern Policy and Programming provides the focus within the department for interdepartmental efforts to co-ordinate federal and territorial policies and programs affecting the North. In addition, it has particular responsibilities for policy development and evaluation, northern research, and special social, cultural and economic development programs for northern Inuit.

**Northern Policy Directorate**

***Responsibilities***

The Northern Policy Directorate provides a strategic framework within which policies for the north are developed to ensure that they are integrated into and consistent with the government's overall objectives for the north.

The directorate comprises four divisions which with their respective responsibilities, are indicated below.

Policy Division:
The Policy Division identifies emerging policy issues and develops related policy options and recommendations.

Planning Division:
Established in 1981, the Planning Division directs and coordinates the planning process in the northern Program, analyzes program plans, manages and co-ordinates program policy and strategy, and provides advice on planning matters.

Native Claims Division:
Formed early in 1982, the Division co-ordinates Program inputs to the native land claims negotiation process and provides advice to management on the policy, program and operational implications of concessions made to native groups.

Coordination Division:
This Division, provides staff support to interdepartmental advisory committees, prepares and publishes the Annual Northern Expenditure Plan and Government Activities in the North. The Division also maintains a co-ordination and liaison function with other north-oriented government departments and agencies relating to policy initiatives impinging on the North.

The Toponymic Unit coordinates the naming of geographic features in the North and on Indian reserves and represents departmental interests on the Canadian Permanent Committee on Geographical Names.

## Northern Coordination and Social Development Directorate

### *Territorial Relations Division*

The Division continued to monitor constitutional development in the two Territories.

De facto responsible government was introduced in the Yukon in the fall of 1979. Since then, control and administration of the Territorial Government has been by an elected Executive Council, functioning with most of the powers of provincial cabinets. The Commissioner's role is similar tothat of a Lieutenant Governor in the provinces. The Territory has assumed a more autonomous voice in federal-provincial conferences.

The question of division remains the major constitutional topic of the Northwest Territories. The Unity Committee Report was accepted in November 1980 and recommended that a territorial plebiscite on division be held within two years. Accordingly, a Special Committee on the Impact of Division was formed to develop a report and inform the N.W.T. public about the implications of division. In October 1981, the Government of the Northwest Territories published a discussion paper intended as the first stage in developing a consensus on division. The paper addressed the question of political development in the N.W.T. and, together with the Report on Impact, was intended to form the basis of an information campaign on division.

In November, the Dene Nation put forward its proposal for the creation of a Denendeh territory out of the western N.W.T. The Denendeh paper and the paper published by the Government of the Northwest Territories formed the basis of a conference held in January 1982, attended by all major native groups and community leaders. This conference resulted in the creation of a Constitutional Working Group. Its purpose was to negotiate constitutional reform with the federal government and to initiate political and administrative reform within the N.W.T.

In December 1981, the N.W.T. Legislature passed a Plebiscite Ordinance, which called for a plebiscite to be held in April 1982, asking all persons who had lived in the territory for at least three years, the question: "Do you think the Northwest Territories should be divided?" While 56% of the votes cast favoured division, the Ordinance does not bind the N.W.T. government to the plebiscite results. In May,the N.W.T. Legislature passed a motion to request the Federal Government to create (in consultation with them) a Federal Boundaries Commission which would by the spring of 1983 "... recommend the exact boundaries of the new territory". This matter and all others concerning future directions in the North are under consideration by the federal cabinet.

***Review of 1981-82***

The responsibility for Mining Safety Inspection was transferred to the Territorial Government effective June, 1981.

***Plans for 1982-83***

The Division co-ordinated preparation of Federal-Territorial Financial Agreements covering fiscal year 1982-83 for both territories.

### *Northern Social Research Division*

***Responsibilities***

The Division plans, conducts and sponsors research. It supports both the training of northern scientists by Canadian universities through the Northern Scientific Training Grants Program, and through the Association of Canadian Universities for Northern Studies. The Division also provides the Department and the territorial governments with analyses of social, economic and technological developments in the foreign North and administers a program for scientific resource centres in Canada's North. The objectives of this program are to expand the amount of scientific work done in the North and to develop more scientific expertise there.

***Review 1981-82***

The Division's research related primarily to problems of social change for native people in the North. Much of this work was done under contract by university scientists and others. Division officers supervised and co-ordinated programs in northern demography and reported on the social, economic and technical aspects of offshore drilling activities in the foreign North, and native land claims in Alaska.

The Division provided funding to the Association of Canadian Universities for Northern Studies, which held its fourth annual meeting at the University of Calgary.

Last year was the twentieth year of the Northern Scientific Training Grants Program. Grants totalling $525 000 were awarded to provide northern experience to scientists-in-training.

Grants were made to the following organizations affiliated with the universities as indicated in brackets: Committee on Arctic and Alpine Research (British Columbia), Boreal Institute for Northern Studies (Alberta), Committee on Northern Studies (Manitoba), Institute for Northern Studies, (Saskatchewan), Committee for Arctic and Sub-Arctic Research (Toronto), Northern Research Group (Ottawa), Northern Research Committee (Western Ontario), Presidential Committee on Northern Studies (McMaster), Centre for Northern Studies and Research (McGill), Centre for Research in Labrador (Memorial), Committee on Northern Studies (York), Groupe de recherches nordiques (Montréal), Centre de recherches sur le Moyen-Nord (Québec à Chicoutimi), Centre d'Etudes nordiques (Laval), Centre d'Ingénierie nordique (Ecole Polytechnique, Université de Montréal), committee on Northern Studies (Waterloo), Committee on Northern and Native Studies (Carleton), Northern Studies Group (Calgary), Northern Studies Committee (Trent), Northern Studies Group (Windsor), Northern Studies Group (Queen's), Centre de la Recherche et des Etudes Avancées (Trois-Rivières).

The Division operated the Northern Scientific Resource Centre at Inuvik. This laboratory, opened in 1963 provides general laboratory and other facilities in the Mackenzie Delta region for research in a variety of disciplines. Another Northern Scientific Resource Centre, at Igloolik, supports research in the eastern Arctic. Work continued on establishing a Science Institute in the North. This work is in response to the growing concern of northerners that research should be more responsive to their social and economic needs and that research on the North should be carried out in a northern institution.

***Plans for 1982-83***

The Division will continue to administer programs that support northern science and research. It will continue to support the Northern Training Grants Program and the Northern Resource Centres. It will also continue to provide core-funding to the Association of Canadian Universities for Northern Studies and will implement the proposed Northern Science Institute. The Division will also carry out specific research, such as a study of demographic effects of the Norman Wells Pipeline.

Some preliminary work on the development of a northern science policy will be carried out. The initial tasks will be to determine the major objectives and goals for scientific activities in the North and to examine their relationship to the national objectives for the North and to the pace of northern development. The Division will also review the northern scientific and technological work supported by federal departments and agencies. This work will be co-ordinated with federal departments, territorial governments, industry, universities, native associations and other groups.

The Circumpolar Affairs Group will continue to monitor and assess the socio-economic, political and technical developments in the foreign North in terms of their relationship to northern Canada. The Group will also advise on policy matters relating to the Northern Program.

## *Social and Cultural Development Division*

***Responsibilities***

The Social and Cultural Development Division administers programs relating to the social and cultural development of Inuit and other northern native people. The Division has five Sections: Native Liaison, Inuit Art, Culture and Linguistics, Vocational Training and Loan Fund and Administration.

The Native Liaison Section provides a link between the federal government and the northern native people. It arranges funding for groups to research, develop and negotiate their land claims; it also enables native groups and the federal government to consult on northern development issues.

The Inuit Act Section is the central agency concerned with all aspects of Inuit art. It provides professional assistance to art-producing co-operatives. In particular, it has worked with the Canadian Arctic Producers Co-operative and La Fédération des Coopératives du Nouveau Québec to develop markets for northern arts and crafts.

It conducts research and prepares publications, including a newsletter, "About Arts & Crafts" and provides information to institutions and the public. The Section also carries out a national and international exhibition and lecture program.

The section has Category "A" designation under the Cultural Property Export and Import Act, allowing it to receive donations of certified Inuit artworks.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts. The Council helps artists to protect their work through copyright.

The Culture and Linguistics Section provides translation services in a variety of Inuktitut dialects and orthographies, publishes a quarterly magazine, "Inuktitut"and administers a grants program that enables Inuit to participate in a wide range of cultural activities. The Section sponsors projects involving Inuit-made films, Inuit broadcasting and literature and language development. The Section also carries out the Department's funding and liaison activities in connection with the Inuit Cultural/Education Centres in the N.W.T. and Labrador.

The Vocational Training Section provides counselling services to northern native students in southern Canada and operates Inuit House in Ottawa. It administers an on-the-job training program to increase northern native employment, provides apprenticeship training and arranges special training programs for northern native people.

The Loan Fund and Administration Section provides a number of special services and is responsible for policy relating to the Eskimo Loan Fund. It also co-ordinates the Fund with associated financial assistance programs. This Section also administers a five-year Co-operatives Development Program.

***Review 1981-82***

No new native claims were accepted for negotiation during the year from native claimants in either the Yukon, Northwest Territories or Labrador. Of the six active claims for negotiation, three are in the N.W.T., and one is in Yukon.

The Council for Yukon Indians has continued negotiating its claims and has signed more than 15 related supplementary agreements with the federal government. Final agreement-in-principle is expected by the spring of 1982.

The Dene and Métis held a preliminary negotiating session, but further negotiations were broken off, pending broadening of the federal position on constitutional development in the Northwest Territories.

Final settlement of the Committee for Original Peoples Entitlement claim is still delayed; negotiations on this claim have not been pursued since January 1981.

Inuit Tapirisat of Canada concluded an agreement-in-principle on wildlife matters, but further negotiations were delayed pending approval by all federal departments.

In the meantime, the Labrador Inuit Association continued to formulate a specific land claims proposal.

The Division began work on a number of projects relating to the conservation of barren-ground caribou, particularly the Kaminuriak and Beverly herds. These projects have resulted in an inter-governmental agreement leading to native participation in an interjurisdictional program for managing the herds.

An active program of support for Inuit art included exhibitions, publications and public information programs.

Major works of sculpture were shown at the Prince of Wales Northern Heritage Centre in Yellowknife, and a display accompanying an educational program featuring northern games was arranged in co-operation with the National Museum of Man. A brochure explaining the use of the Canada Eskimo Art Mark was published for wide distribution by the Inuit art marketing co-operatives.

The Anik B communications project of Inuit Tapirisat of Canada (ITC) and Taqramiut Nipingat Inc. (TNI) of northern Quebec were successfully concluded. Contributions of up to $3.9 million were approved to support an Inuit television broadcasting service over two years.

Three issues of Inuktitut magazine were published including a special issue on Inuit education. The Division, in co-operation with ITC, also published an information handbook for Inuit living in southern Canada.

Extensive field work in Inuit communities in northern Quebec was carried out to revise a major Inuktitut dictionary. During the year, the Department, in co-operation with the Inuit Cultural Institute (ICI), again sponsored workshops on Inuktitut terminology for Inuit translators.

Over 175 northern native people participated in on-the-job training programs during the year. Carpentry apprentices gained practical experience by constructing a home at Baker Lake, N.W.T. for the Northern Affairs Program. Special training courses were conducted in syllabic touch typing, and ongoing programs to train aircraft pilots and mechanics were evaluated.

During the year, the Vocational Training Section provided counselling services to more than 150 northern native people.

Through the Eskimo Loan Fund, more than $800,000 was lent to 15 Inuit and Inuit-controlled business. An additional $1.7 million was paid in economic development contributions. The five-year Co-operative Development Program entered its final year.

The Program's objectives are to establish financial stability and develop better management skills for northern co-operatives. The N.W.T. and northern Quebec co-operatives did $32.7 million in business and paid more than $9.1 million to northerners in wages and other payments. The evaluation of the northern socio-cultural effects of the program was completed, as was the monitoring and assessment of the consolidated financial results of the northern co-operatives.

*Plans for 1982-83*

An agreement was reached between federal, provincial and territorial governments and various native groups on joint management of the Beverly and Kaminuriak caribou herds. As a result of this agreement, the Division will continue to fund a community information and education program. The Division will also fund northern native groups thus enabling them to consult with the federal government, resource developers and other agencies on matters related to northern development.

On the recommendation of the Canadian Eskimo Arts Council, a conference for curators and other specialists will be held to encourage research into and exhibition of Inuit art. A free flow of information will be encouraged among museums, galleries and similar institutions. Inuit art marketing agencies will be encouraged to direct their activities toward western Canadian and foreign markets.

The Division will continue to foster Inuit television and broadcasting and will work to increase the amount of Inuktitut programming. Specialized Inuktitut lexicons for Inuit translators will continue to be developed. A comprehensive Inuktitut-English dictionary will be prepared for publication in co-operation with the Government of the Northwest Territories and Inuit cultural associations. Projects to encourage Inuit literature and music will continue. Inuktitut magazine will publish special issues on the western Arctic and Inuit performing arts.

The Division will complete the evaluation of the Co-operative Development Program and will recommend the directions that assistance to the Northern co-operative systems should take in future.

**Major Projects Assessment Directorate**

*Responsibilities*

The Directorate is the focal point for the planning, public review, assessment and post-permit responsibilities for all hydrocarbon transportation proposals north of 60 degrees. It co-ordinates assessment and review activities both within the Department, and between the department and territorial governments and other federal departments and agencies. The Directorate is also the base for the Interdepartmental Policy Committee for major resource development projects in the North. There are three Divisions: Planning, Assessment and Public Review.

*Review 1981-82*

Public reviews of the environmental and socio-economic aspects of the Arctic Pilot Project and Beaufort Sea developments were carried out in co-operation with the NEB and FEARO, respectively. The Directorate made available funds totaling $450 000 to help native and northern interest groups participate in these reviews. The Directorate also headed the development of a government strategy for hydrocarbon development in the North in the 1980's and developed "Planning Guidelines" for major northern resource development projects. The Norman Wells Project was approved; a Project Management team was formed to implement the Cabinet decisions and, in February 1982, an Interim Project Coordinator was appointed. The Department carried out its ongoing responsibilities in the Yukon for the Alaska Highway gas pipeline through liaison with the Northern Pipeline Agency.

*Plans for 1982-83*

The Directorate will carry forward the co-ordination and development of government plans for dealing with hydrocarbon development, particularly in the Beaufort Sea and High Arctic. It wil continue providing funds to assist native and northern interest group interventions in public reviews of northern hydrocarbon development proposals. The Directorate will also take the lead in preparing the Department's response to the applications by the Arctic Pilot Project and the TransCanada Project to transport liquefied natural gas. The Directorate is preparing a publication that will provide a broad audience of Canadians with an overview of the oil and gas exploration activities of the Beaufort Sea-Mackenzie Delta region. The publication will explain how these activities have affected the region's people and environment.

**Lancaster Sound Regional Study**

*Responsibilities*

The Lancaster Sound Regional Study evolved from the 1978 Public Hearings to examine an application by Northern Petroleums Limited for permission to drill an exploratory well in Lancaster Sound. The Federal Environmental Assessment and Review Process Panel, convened to conduct the hearings, concluded that a meaningful assessment of the Environmental and Socio-Economic impacts of exploratory drilling in Lancaster Sound could not be made in isolation from the broader issues that affect all uses of the area. The Panel recommended that the Department of Indian Affairs and Northern Development should undertake a comprehensive review of the complex resource use problems of the Lancaster Sound Region.

Accordingly, DIAND set up the Lancaster Sound Regional Study to initiate comprehensive planning for the future of the region. A Steering Committee and Working Group drawn from five federal departments and the Government of the N.W.T. was established. The Working Group assembled a data base that summarized all of the physical, environmental and socio-economic information available. The Group then synthesized this information and analyzed the issues bearing on regional planning. A draft green paper was produced, which was released by the Minister, DIAND, in February 1981.

***Review 1981-82***
A thorough public review of the draft green paper followed. Community meetings in Pond Inlet, Arctic Bay, Resolute, and Grise Fiord, and workshops in Resolute and Ottawa enabled all interested sectors of the public to respond to the questions and issues raised in the paper. Participants in these discussions all agreed on the necessity of involving local residents in long-term regional planning, and in clarifying the uncertainties shared by Inuit and industry. These uncertainties arose from the unsettled Nunavut land claim and the lack of broad government policies for the North. The report by the Chairman of the public review phase, Professor Peter Jacobs of Montreal, entitled "People, Resources and the Environment", was published and released in June 1982.

A final green paper was published in May 1982, and the revised data atlas, a month later. The paper drew on both updated information and the public's comments and recommendations. It also discussed the effects of national policies and current initiatives on the future of the Region. Specifically, the paper covered the process for negotiating land claims, a series of options for possible future uses of the region's resources and various strategies for beginning a regional planning process for Lancaster Sound that would be in harmony with the Department's land use planning policy.

***Plans for 1982-83***
Public comment on the final green paper will be compiled, and a study session and workshop will be held in the Lancaster Sound region in the fall of 1982 to enable Inuit to respond to the green paper. (All Lancaster Sound publications are published in Inuktitut, as well as in English and French.) The public response to the green paper will contribute to land use planning in the region and will help to narrow the range of options before any final decisions are made on the future use and management of the region's resources.

**Northern Environment**

*Land Management Division*
***Responsibilities***
The Division administers surface rights and environmental regulations for 3.9 million square kilometers of northern Crown lands.

***Review 1981-82***
On February 9, 1981, the Yukon Government accepted responsibility for controlling recreational lands consisting of some 45 campgrounds and 900 cottage lots in the Yukon. During the year, legal descriptions of the transfer areas, and referrals to the Council for Yukon Indians were completed, and Order in Council transfers were executed.

Views of Arctic Freighter "Kakawi" unloading in harbour at Resolute Bay, Cornwallis Island, N.W.T.; iceberg in foreground. Photo by George Hunter - 1974.

Revisions to the Territorial Lands and Public Lands Regulations were completed during the year. The Territorial Quarrying Regulations were also revised, but had not been finalized by year's end. The Land Titles Repeal Bill which received first reading in January 1981, did not proceed to second reading during 1981-82.

Division personnel continued to provide special information to claims negotiations north of 60°, and participated in several negotiation sessions.

The Division received and processed more than 460 applications for land use permits for exploration and development in the Yukon and Northwest Territories. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying and land clearing. In 1981, quarrying permits authorized the removal of 1 569 000 cubic yards of sand and gravel in the Northwest Territories and 1 125 000 cubic yards in the Yukon. In addition, large quantities of material were excavated to construct artificial islands for drill-rigs in the Beaufort Sea.

The report of the Interdepartmental Working Group on the International Biological Program (IBP) *Ecological Sites in Polar Bear Pass* was released for comment September 18, 1981.

The Resource Inventory and Analysis Program, under the Canada — Yukon General Development Agreement signed in 1977, was implemented under a Subsidiary Agreement in 1979. This was the third year of a four-year program to expand information on the resources of the Yukon Territory. Total cost of the program is estimated at $2.4 million.

***Plans for 1982-83***
Collaboration with the Yukon Government on the implementation of a Yukon agricultural policy is expected during the year.

Revisions to the Territorial Quarrying Regulations should be completed in 1982-83. These revised Regulations, together with the revised Territorial Lands and Public Lands Regulations, should provide an effective legal framework for managing both offshore as well as onshore lands.

Grants of easement for the Alaska Highway Natural Gas Pipeline and the Norman Wells Pipeline, and Easement Agreements for both these lines should be completed in 1982-83.

The Division will continue to be involved in land claims negotiations in 1982-83, at a pace dictated by the number and progress of comprehensive claims negotiations.

Final recommendations on Polar Bear Pass are expected to go to the Minister in the spring of 1982.

*Land Use Planning Branch*

***Responsibilities***
The Land Use Planning Branch, Ottawa, provides technical and professional assistance to the regional planning offices of the Department. It co-ordinates the involvement of other federal agencies in land use planning in the North and, as required, provides advice to the Minister and the Northern Land Use Policy Committee.

***Review 1981-82***
In July 1981, the Minister, DIAND, announced that Cabinet had approved a new policy for Northern Land Use Planning. This policy called for the establishment of a planning system in the North, under DIAND leadership. Various federal departments, territorial governments, native organizations and others will participate in developing the system. The planning system centres on the creation of Northern Land Use Planning Commissions in each Territory. The Commissions will be responsible for developing comprehensive land use plans, beginning with priority areas such as the Beaufort. The policy's objective is to create a systematic, open process for planning and co-ordinating the use of northern land and resources while avoiding or resolving conflicts.

Treasury Board Program approval has been received and work is underway to develop the necessary administrative mechanisms. The Department is soliciting input from all federal and territorial government departments with interests in land use planning in the North, and from industry, native organizations and various interest groups, to determine priority areas for planning.

***Plans for 1982-83***
The Northern Land Use Planning Program is expected to be fully implemented for 1982-83 with Land Use Planning Commissions established in each Territory. Initial planning will begin in priority areas, including the MacMillan Pass/Howards Pass Region, the Beaufort/MacKenzie Delta, the MacKenzie Valley and Lancaster Sound.

*Forest Resources Division*

Forest Fire Management Program

***Responsibilities***
This Program plays an important role in the management of northern renewable resources. It provides fire protection to communities, power transmission and communication networks. It is responsible for managing recreation and timber areas, watersheds, erosion-prone sites and wildlife areas adjacent to communities and used by the residents as a source of food.

***Review 1981-82***
Cabinet approved a new fire management policy, which the Division implemented. The policy is based on recommendations of the Forest Fire Review Panel, which submitted its report in 1980. One of the main features of the policy is the establishment of a Fire Attack Zone (FAZ) and an Observation Zone (OZ). All fires in the FAZ receive immediate, full attention. If the fire cannot be contained within the Zone, a decision is made whether to continue fighting the fire, attack a portion of it, or allow it to burn itself out. Fires in the OZ are generally not fought, but the policy allows flexibility. Guidelines have been approved that specify how particular kinds of fires should be dealt with.

The Panel made a second major recommendation: to increase community involvement in the management of the Program. Accordingly, community fire councils were formed which helped to delineate the FAZ. A N.W.T. Fire Management Program Committee was also established, involving Dene and Métis members from a number of communities in the Mackenzie Valley. As well, the Rae-Edzo Band was awarded a contract to supply firefighters and fire-fighting services in their immediate area.

Although the new policy covers both the Yukon and N.W.T., no Fire Management Committee has been established in the Yukon.

The Division has had difficulty in implementing the new policy in the Northwest Territories because of the drought which has caused serious forest fire problems in the South Mackenzie Region for the past two years. One particularly dangerous fire, HY49, forced the evacuation of one community and threatened two others. It burned over 625 000 ha and cost almost $1 million. A total of 310 fires have burned 976 080 ha in the N.W.T. In the Yukon, 35 242 ha were destroyed by 91 fires. Total firefighting expenditures were just under $20 million in 1981, compared to just over $20 million for the 1980 fire season.

***Plans for 1982-83***
During the coming year, the initial fire-attack program will be strengthened and the ability to detect fires will be improved. A few fire towers will be built in high-risk areas, and the area covered by electronic lightning detectors will be enlarged. As well, a network of automatic weather stations will augment the existing, conventional stations.

## Forest Management

***Responsibilities***
The Forest Resource Management Program covers the forest resources of the Yukon and the Northwest Territories. The Program's primary objectives are to maintain a continuous supply of wood for the growing economy of the North and to create jobs for northern residents.

***Review 1981-82***
During the year, the Department began to evaluate the Forest Resource Management Program. The evaluation includes an assessment of the extent to which the forests will be able to satisfy the demand for forest products at local and territorial levels while providing opportunities for local employment and income.

The Division has prepared detailed maps of forest types around a number of settlements in the Yukon and N.W.T. In Yukon, the Division has almost completed a Fuelwood Management Plan for the Whitehorse area. The demand for fuelwood has risen sharply in that area in the past few years.

The Division is continuing to compile data on sample plots within the Liard Forest Management Unit in the N.W.T.

Other forest management activities in the regions include a stem-analysis project in the Trout Forest Management Unit in the N.W.T. and regeneration surveys in cut-over areas in the Yukon. The Division continues to co-operate with the Pacific Forest Research Centre on a number of regeneration plots near Watson Lake.

The Territorial Timber Regulations are being thoroughly revised, and a number of sections to the Forest Inventory System to be used in the North are also being developed. The photo interpretation section has been completed with the metric mapping standards; the forest classification and the large scale photo sampling sections have almost been completed.

Forest production in the N.W.T. for 1980-81 was 54 294 cubic metres of lumber, fuelwood and roundwood, which was a slight increase over the 1979-80 levels. The Yukon experienced a sharp drop in production from 158 257 cubic metres in 1979-80 to 57 627 cubic metres in 1980-81. A depression in lumber exports caused Cattermole Timber Ltd. to curtail production. The effect of weak export markets was not felt in the N.W.T. because production there is for the local market.

***Plans for 1982-83***
In the Yukon, the Division will complete the Fuelwood Management Plan. It will continue its work on detailed forest-typing around communities, and on regneration surveys and routine forest management activities. In the N.W.T., a few blocks of timber will be surveyed for sawmill operators and work will continue to compile data on sample plots within the Liard FMU. As well, the Division will photograph two blocks of timber from the air for subsequent evaluation.

The Division will also complete a revision of the Territorial Timber Regulations and an evaluation of the Forest Management Program. Work will continue on the documentation of the Forest Inventory System.

## Water Resources Division

***Responsibilities***
The Division is responsible for protecting and managing the inland waters of Yukon and the N.W.T. and the waters adjacent to the mainland and islands of the Canadian Arctic. It controls the use of land and water for hydropower developments on federal lands south of 60°. The Division carries out these responsibilities under the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act (for non-shipping activities).

***Review 1981-82***
A three-year study culminated with release of the "Mackenzie River Basin Study Report".

The Division began full-scale studies of the water and related resources of the Yukon River Basin as a prelude to comprehensive resource utilization plans for the Basin.

A study of the hydropower potentials of 25 sites on the Horton, Hornaday and Anderson Rivers in the N.W.T. was completed.

The history of the Arctic Waters Pollution Prevention Act was reviewed.

Offshore environmental regulatory activities and the monitoring of Beaufort Sea drilling activities continue as a major part of the Division's responsibilities.

The Division gave Esso and Dome approval to construct a number of artifical islands in the Beaufort Sea.

***Plans for 1982-83***
The Division will be developing an inland water management policy for the North. Proposed amendments to the Northern Inland Waters Act are expected to go to Cabinet for consideration. The Division will also begin to develop an Arctic waters management policy. Proposed amendments to the Arctic Waters Pollution Prevention Act will be presented to Cabinet for consideration. The Division will implement the recommendations of the Mackenzie River Basin Study and will work to develop the federal position on regulating the flow and quality of water moving across territorial and provincial boundaries.

The Division will continue to participate in the Yukon River Basin Study and to develop an inventory of hydro power for rivers in the North.

Finally, the Division will continue to play the key role in implementing the Government's Arctic Seas Contingency Plan.

## Northern Environmental Protection Branch

**Responsibilities**
The Branch co-ordinates, develops and recommends policies, strategies, plans and regulations for protecting the environment in the Yukon, N.W.T. and adjacent offshore regions. It sponsors applied research to support this role.

The Branch develops policies for assessing the impact that northern development and engineering projects have on the environment. It recommends the kinds of research that would be most appropriate for the North and serves as the link between the Northern Program and the Federal Environmental Assessment and Review Office.

### *Environmental Assessment Division*

**Review 1981-82**
The Division prepared comments on both the draft guidelines for the Beaufort Sea Environmental Impact Statement and the Environmental Protection Plans for Foothills Pipe Line's Alaska Highway Gas Pipeline Project. The Division reviewed Foothills Pipe Line's Routing Alternatives, assessed part of the Alaska Highway Gas Pipeline Project and participated in the EARP public hearings associated with the Project.

The Division also provided advice and assistance to Regional Environmental Review Committees; environmental advice and input to the Northern Roads and Airstrips Division for the North Canol Road Initial Environmental Evaluation; advice to the Northern Program on the environmental regulation of the Norman Wells to Zama (Alberta) pipeline and advice on caribou and other environmental issues to Headquarters and the Regions. The Division participated in the I.T.C. Land Claims negotiations and in the initiation of a native wildlife harvest study in the Keewatin.

**Plans for 1982-83**
The Division will begin a review of the Beaufort Sea Hydrocarbon Development Environmental Impact Statement and continue to assess Foothills Pipe Line's Environmental Protection Plans. It will also assist in a major review of the Keewatin caribou regulations. Environmental terms and conditions for the Esso Norman Wells project will be finalized during the 1982-83 period.

In view of the increasing mineral development in the South Nahanni River Basin, the Division will carry out an environmental overview of this area.

The Division will continue to advise headquarters and the regions on land claims, native wildlife harvest studies and on matters relating to other activities of the Program.

### *Environmental Studies Division*

**Review 1981-82**
Experimental and survey work on the disposal of drilling fluids was completed this year. A fourth volume in a series of reports on this project was published detailing the toxic effects of drilling fluids on vegetation in the High Arctic. Finalization of the study will include reports on biological changes adjacent to drill sites in the Mackenzie Delta and the northern Yukon.

Work on nutrient loading and its implications for recreational and other development capacity of northern lake basins continued at Schefferville, Québec. Results from this study, which is going into its last year of field work are now being used in the Territories.

Compilation and publication of the series of Ecological Bibliographies on the Arctic Islands Archipelago continued.

Crude oil spills data from completed studies in the Mackenzie Valley were examined to shed more light on long-term degradation processes and effects.

Studies to assess the effects of vehicles on the land were completed in the eastern Keewatin.

The Division began a study to enable the development of a hydro geologic model of the effects of uranium mine tailings on a permafrost environment. Preliminary field work is complete and basic data have been compiled.

This year, the Division also began to analyze the data from a survey of uranium mineralization areas in the Keewatin. The study will establish pre-mining background data on radionucleides occurring naturally in the vegetation, and in soils and sediments adjacent to, and far away from uranium mineralization.

Two handbooks containing environmental guidelines are being prepared. One covers mineral exploration and extraction activities; the other recommends procedures for operating pits and quarries.

**Plans for 1982-83**
The study on nutrient loading and development capacity of lakes is expected to be completed.

The Ecological Bibliographies Series will be continued.

The two studies of uranium mining will be continued. A study will be started on the role of lichen-radionucleide interactions in the lichen-caribou-man food chain in the Keewatin.

### *Offshore Environment Division*

**Review of 1981-82**
The Division continued to participate in the Eastern Offshore Marine Environmental Studies (EAMES) through it membership on the EAMES Management Committee and Advisory Board. The Division supervised the production of several reports combining the results of environmental studies from the EAMES Program in the Northern Baffin Bay and Lancaster Sound region. Membership was maintained in the Offshore Labrador Biological Studies (OLABS) Management Committee.

Further environmental activities in the eastern Arctic involved the Baffin Island Oil Spill (BIOS) project and the Arctic Pilot Project (APP). The Division participated in BIOS Management and Technical Committees by financially supporting the project studies, and by co-ordinating the study of hydrocarbon fate and effects on plants and animals dwelling on the ocean floor. The Division reviewed the Integrated Route Analysis of the APP and continued to advise on environmental issues relevant to the route selection. Also, the Division participated in the Kativik Environmental Advisory Committee for northern Québec and in the work of the Arctic Marine Oil Spill Program (AMOP) Management Committee.

The Division presented a number of study papers on environmental concerns at national and international scientific forums.

The report of the contracted study on the effects of oil on polar bears was sent to print. A project was contracted out to develop a computer model based upon the results of the study.

***Plans for 1982-83***

Review of Environmental Impact Statement (EIS) for exploratory drilling in Lancaster Sound-Northern Baffin Bay will be started. The EIS for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region will be reviewed.

The Division will continue to advise the various committees of the APP, AMOP, BIOS and Kativik and to serve generally in an advisory capacity on physical and biological matters in the northern offshore environment.

## Northern Resources and Economic Planning

### Non-renewable Resources

### Oil and Gas

***Responsibilities of Divisions***

The Oil and Gas Lands Division manages the federal government's proprietary interest in oil and gas rights North of 60°. It grants exploration and production licences, maintains a registry of oil and gas rights and monitors royalties and other revenues directly resulting from oil and gas activities.

The Oil and Gas Resources Evaluation Division is responsible for assessing the oil and gas potential of Canada Lands North of 60° and for carrying out economic and geological appraisals of individual parcels of land. The Division assesses exploration programs, records and maintains technical data and keeps a library of exploration reports. Reports on oil and gas activities on Canada Lands are published annually.

The Oil and Gas Engineering Division is responsible for regulating oil and gas activities in Canada's North. The Division sets and enforces standards for safety and general good field practices, including environmental and waste prevention considerations.

On March 5, 1982, the Canada Oil and Gas Act came into force. This Act establishes a new management regime for northern oil and gas activities. The parliamentary process addressed the concerns expressed by the North by amending the Act to take into account Native rights, northern economic participation and environmental protection.

The Ministers of Indian and Northern Affairs, and Energy, Mines and Resources, established the Canada Oil and Gas Lands Administration (COGLA) in the latter part of 1981. The Administration's purpose is to implement the Canada Oil and Gas Act and provide consistency in administering oil and gas exploration and development activities. COGLA serves as the principal contact for the oil and gas industry concerning exploration activities on Canada Lands. Personnel from the Departments of Indian and Northern Affairs and Energy, Mines and Resources were amalgamated into a single group that will report to both Ministers.

Management of social, economic and environmental matters and territorial relations pertaining to oil and gas activities in the North remains within the Department. The Northern Oil and Gas Liaison Directorate serves as the principal point of liaison with COGLA to ensure that the concerns of northerners are reflected in the administration of oil and gas rights and activities.

*Land Management Review*

Oil and gas holdings during 1981 remained fairly stable. At year-end, 60.3 million hectares (Table 1) were held at a level comparable to the pre-Prudhoe oil and gas holding in 1967. The only new rights granted during the year in the southern Territories and central Mackenzie Valey sectors were nine exploration agreements on lands preferentially selected under the amendments to the Regulations by Petro-Canada. To facilitate native land claim negotiations, seven of these exploration agreements restricted access to the lands for exploration purposes until mid-1983. The 7 million hectares granted under these new exploration agreements are approximately equivalent to the rights surrendered from expired oil and gas permits.

The increased number of leases held in 1981 reflects industry's uncertainty about the terms and conditions of the new exploration agreements to be negotiated under the Canada Oil and Gas Act. More than half of the area held for exploration purposes during 1981 is covered by special renewal permits. These discretionary grants were made in consideration of additional exploratory work. The rapidly escalating levels of work requirements for this type of holding provide an appropriate vehicle for the high costs of exploration efforts in the more remote regions of the North. The continuity of such programs to assess the potential for oil and gas reserves is an important element in meeting the objectives of Canada's National Energy Program.

Table 1

*Number of Issued Exploratory Rights (including permits, special renewal permits, exploration agreements) and leases, with areas as of December, 1981:*

| | *Exploratory Rights* | | *Leases* | |
|---|---|---|---|---|
| *Area* | *No.* | *Hectares* | *No.* | *Hectares* |
| NWT Mainland | 110 | 8 437 703 | 1288 | 2 982 902 |
| Yukon | 45 | 590 202 | 188 | 265 974 |
| Arctic Islands | 1521 | 31 702 023 | 612 | 1 430 406 |
| Arctic Coast Marine | 441 | 14 575 008 | 141 | 376 192 |
| TOTAL | 2117 | 55 304 936 | 2229 | 5 055 474 |

*Table 2*

*Revenue Received, 1981 (Calendar Year)*

| | *Yukon Territory* | *Northwest Territories* |
|---|---|---|
| Licence Fees | Nil | $ 350.00 |
| Exploration Agreement Fee | Nil | 2 250.00 |
| Transfer Fee | $ 1 850.00 | 15 855.00 |
| Lease Fee | 30.00 | 3 080.00 |
| Rentals | 347 594.25 | 7 469 763.21 |
| Royalties | 2 135.61 | 4 470 284.92 |
| Forfeiture | Nil | Nil |
| Bonus | Nil | Nil |
| Miscellaneous | Nil | 13.96 |
| Total | $351 609.86 | $12 231 597.09 |

Total for Territories: $12 583 206.95

*Exploration Activity*

Actual expenditures by industry on oil and gas exploration in the Yukon and Northwest Territories remained relatively stable at about $400 million annually. Due to the statistical recording method, expenditures for 1981 exploration and development drilling were reported as $520 million, an apparent increase over 1980. This amount included the expenditures for wells started in 1980 and finished in 1981. Expenditures for geological and geophysical work in 1981 remained at about $30 million.

Very little geological surface activity was carried out North of 60° during the year. Panarctic Oils carried out the major geological and research project in the Arctic Islands. The level of geophysical exploration has remained constant over the past two years. Canadian Superior, Dome and Geophysical Services Inc. carried out marine seismic surveys totalling about 12 000 km in the Beaufort Sea. Aquitaine (now Canterra) completed a 1 100 km survey in the Baffin Bay-Davis Strait areas. Esso conducted a 1 300 km seismic program in the Norman Wells area and in the southern mainland Northwest Territories. Mobil conducted 100 km of seismic surveys in the Arctic Islands, Panarctic completed a 1 300 km survey and Chevron conducted a 175 km survey on northeast Banks Island.

The Number of wells drilled in 1981 declined to 13 exploratory wells having a combined depth of 38 990 metres.

In its sixth consecutive year of offshore drilling in the Beaufort Sea, Dome and its partners drilled six wells. Three wells, suspended in 1980, were re-entered, drilled to target depth and completed. Three new exploratory wells were begun, but were suspended for re-entry in 1982.

Of the three wells drilled to total depth, Kilannek A-77 was unsuccessful and abandoned. Drilling on Koakoak 22 started in 1978. Oil flows at rates up to 2 830 barrels per day (450 $m^3$ per day) were recorded on two tests, 160 m apart in a single reservoir. Kopanoar 2 I-44, a stepout to Dome's 1979 oil discovery at M-13, flowed oil in 3 tests and encountered pay zones not developed in the original well. Further delineation, drilling and testing in 1982 (and possibly in future years) would be required to establish the nature and full extent of this new discovery.

Of the three wells suspended for re-entry in 1982, Kenalooak J-94 was drilled to a depth of 3 475 m, Orvilruk 0-03 was drilled to 3 606 m and Irkaluk B-35 to a depth of 2 211 m. No testing was carried out at any of these three wells before the wells were suspended for completion in future years.

Gulf Canada and its partners drilled one well in the Beaufort Sea. The Issungnak L-86, drilled from a Canmar drillship, reached target depth and was abandoned.

Esso, on behalf of itself and its partners, drilled two exploratory wells from sacrificial beach artificial islands. The Issungnak 2 0-61 was spudded in 1981, drilled to a depth of 4 460 m and abandoned as a potential oil and gas well. Alerk P-23 was drilled to target depth of 3 223 m without encountering oil and gas and was abandoned.

Panarctic continued its offshore exploration of the Arctic Islands, drilling from artificially thickened ice-platforms at three offshore locations in the Sverdrup Basin. Testing at all three wells resulted in oil and gas discoveries. Oil flowed to the surface of the Skate B-60 well, the first such occurrence from Mesozoic sediments in the Arctic Islands. Oil and gas were also tested in the MacLean I-72 and Cisco I-66 wells.

In addition to its offshore program, Panarctic drilled a further delineation well, Bent Horn G-02, in the Bent Horn oil field on Cameron Island, and in partnership with Dome, drilled an exploratory well at N. Hoodoo N-52 on Ellef Ringnes Island. Both of the wells were dry and abandoned. Other operators included Chevron, which drilled and abandoned its Muskox D-87 well on northern Banks Island, and Paramount Resources, which continued its drilling program in the Southern Territories.

*Production Activity*

The Pointed Mountain Field in the southwest sector of the N.W.T. is the only producing gas field in Northern Canada. In 1981, the field's daily average production was $1.0 \times 10^6$ $m^3$ (33.6 million cubic feet per day). The Kotaneelee gas field in the southeast sector of the Yukon, 25 km south of the Pointed Mountain field, was closed down for most of the year due to the lack of export markets. The production from both fields is under contract to West Coast Transmission for exports. Consequently, production tends to be limited by export demand.

The refinery at the Norman Wells oil field in the central Mackenzie River Valley continued to supply its local and downstream markets with products in keeping with the federal government's policy of ensuring that northerners receive the advantages of local energy supplies at near parity with the Edmonton price. Crude oil prices at Norman Wells are substantially less than the current domestic crude prices.

In 1981, the federal government approved the construction of an oil pipeline from the Norman Wells oil field to connect with the pipeline from Zama to Edmonton, Alberta. However, two delays occurred. The first was a two-year delay in starting construction of facilities for increasing production. The second was a two-and-a-half year delay in pipeline construction. Both delays were in response to local northern concerns and were agreed to by the companies proposing the project and the Minister of Indian and Northern Affairs.

The Norman Wells field is one of the largest in Canada with over 85 × $10^6$ $m^3$ (600 million barrels of oil) in place. The completion of Esso's waterflood project and additional productive capacity will increase the recovery factor for these reserves from 17 to over 40 per cent. Production is expected to increase from 3 000 to 30 125 barrels a day of natural oil and gas liquids for the first five years of the project, after which the rate of production will gradually decline. The project will provide major economic benefits and employment opportunities for northerners. Other Canadians will also benefit from enhanced recovery of oil reserves and substantial savings in both oil import compensation payments and foreign exchange.

### *Basis in Law*

- Canada Oil and Gas Act
- Canada Oil and Gas Land Regulations
- Canada Oil and Gas Rights Regulations
- Oil and Gas Production & Conservation Act — amended under the Canada Oil and Gas Act
- Canada Oil and Gas Drilling Regulations
- Canada Oil and Gas Operations Regulations — (imminent)
- Canada Oil and Gas Production Regulations — (proposed)
- Canada Oil and Gas Geophysical Regulations — (proposed)
- Canada Oil and Gas Structures Regulations — (proposed)
- Canada Oil and Gas Diving Regulations — (proposed)
- Canada Oil and Gas Pipeline Regulations — (proposed)
- Public Lands Grants and Territorial Lands Act — RSC 1952
- Arctic Waters Pollution Prevention Act — RSC 1970

### ***Plans for 1982-83***

The Canada Oil and Gas Lands Administration has estimated that some 200-300 replacement Exploration Agreements and Provisional Leases will be negotiated for the existing northern oil and gas rights in 1982 under the Canada Oil and Gas Act. Esso, Gulf and Dome have submitted tentative exploration programs covering the next four to five years. Both Gulf and Esso have announced plans for new capital expenditure ($670 and $170 million respectively) to build new drilling platforms, which will moderately increase the level of exploration in the Beaufort Sea in 1983.

A new Industrial and Regional Benefits Office in the Department of Industry, Trade and Commerce was established by mid-1981. It will serve to increase regional economic and employment benefits for Canadians from major projects undertaken in Northern Canada. Northern employment and opportunities for entrepreneurs will increase as a result of negotiations with COGLA. These negotiations have provided for socio-economic "spinoffs" from proposed oil and gas program.

During 1981, the joint proposal by Dome, Gulf and Esso, for Beaufort Sea Development was the subject of public hearings by the Environmental Assessment Review Panel. The principal objective of the hearings was to establish the guidelines for preparing the Environmental Impact Statement (EIS). The Environmental Impact Statement jointly prepared by the three companies is expected to be submitted for review under the Assessment Review process in mid-1982.

The National Energy Board is expected to conclude its study of the Arctic Pilot Project and of the Drake Point gas field production proposal in the Autumn of 1982 and will publish its decisions and findings in the winter of 1982-83.

Panarctic Oils Ltd. has announced that it intends to increase the number of drilling rigs to five in 1982 (up from three rigs in 1981) for additional drilling capacity in the Arctic. Consequently, Drake Point Field Development should not reduce the winter's exploration efforts in the offshore Arctic Islands.

## *Mining Division*

### ***Responsibilities***

The Mining Division administers mining and mineral rights (excluding oil and gas), develops policies and assists in drafting legislation covering mineral rights in the Yukon and Northwest Territories. The Mining Division advises various government agencies on current and proposed exploration and mining developments, and maintains an inventory of mineral resources. The Mining Division in Ottawa includes two section — Mining Resources and Mining Lands.

In the North, two Regional Directors have administrative responsibility for mines and minerals. They are responsible for the Northern Affairs Program in the Yukon and Northwest Territories respectively. A Geological Services Section and a Mining Lands Section are both located in Whitehorse, Y.T. and in Yellowknife N.W.T. A Mine Inspection Section is also located at Whitehorse. The Government of the Northwest Territories provides a similar service at Yellowknife.

### *Mining Lands*

For administrative purposes, the Territories have been divided into seven mining districts. A mining recording staff is responsible for disposing of mineral rights within each district in accordance with legislation. A Supervising Mining Recorder in each Territory ensures that uniform practices are observed in the administration of the various mining Acts and regulations.

### *Mining Resources*

The Mining Resources Section maintains a microfilm library on all published scientific reports and unpublished assessment reports on mineral properties in the Yukon and Northwest Territories. The section's prime functions are to assess the potential for mining specific minerals in certain areas within the Territories and to examine proposals for using these areas for parks, transportation routes and power developments. This Section (and the Mining Division as a whole) informs and advises the Minister on current and proposed mine and exploration developments in the North. The Section produces Monthly Mines and Mineral Statistics and annual Mines and Minerals Activities reports. These reports are used by the mining industry, the public and government, and are available upon request.

The Geological Services Section provides a geological service to the mineral industry in the North. Two core libraries, the H.S. Bostock Library at Whitehorse and the C.S. Lord Library at Yellowknife preserve diamond drill core.

Each has laboratory facilities for core-splitting, diamond-saw cutting, thin section preparation and core storage. Regional and district geologists conduct mineral property examinations, collect rock and mineral specimens and advise the mineral industry, government departments and research scientists on geological and exploration matters. Department geologists assist prospectors by identifying rock and mineral specimens, conducting prospector training courses and by preparing geological compilation maps on areas containing minerals.

### *Mine Inspection*

The Mines Inspection Section advises on the Yukon Territory's Mining Safety Ordinance, Mine Safety Regulations and its Blasting Ordinance and Regulations. The Section also prepares new safety legislation when required. A regional mining engineer is stationed at Whitehorse. He has a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claim inspector and a clerk. The Section is responsible for the following: inspecting mines, quarries, blasting operations and mineral claims to ensure that they comply with safety legislation; inspecting mineral claims to ensure compliance with the Yukon Quartz Mining Act; ensuring that enough mine personnel are trained in mine rescue, recovery operations and first aid; conducting ventilation and dust surveys; monitoring radioactive contamination, and carrying out environmental studies at underground and surface mining properties.

### *Yukon Territory*

#### Mining Production

Mineral production in the Yukon Territory during 1981 was valued at $307.9 million (excluding natural gas), compared to $364 million for 1980. Lower metal prices accounted for much of the reduced value of production. Mineral production came from three lode mine establishments, which produce zinc, lead, silver, copper and gold. In addition, gold was produced from over 150 placer mining operations. Lead and zinc accounted for 50 per cent of mineral production value, followed by silver, 22.6 per cent and gold, 20.7 per cent.

In 1981, the Yukon Territory accounted for 3.2 per cent of the total value of Canadian metallic mineral production. It accounted for 18.9 per cent of the lead, 8.7 per cent of the zinc, 14.3 per cent of the silver, 7.2 per cent of the gold and 1.3 per cent of the copper produced in Canada. Producing mines employed 993 persons, or 8.6 per cent of the Yukon working force. More people were employed full-time and seasonally, in placer mining.

#### Mineral Exploration

The following chart shows mineral claims stated and recorded in the Yukon during the year with comparative figures for 1980.

| Districts | Claims Recorded | |
|---|---|---|
| | 1981 | 1980 |
| Whitehorse | 3 586 | 3 281 |
| Dawson | 1 068 | 2 091 |
| Mayo | 3 208 | 2 253 |
| Watson Lake | 3 430 | 3 545 |
| Total | 11 292 | 11 170 |

Estimated expenditures on mineral exploration amounted to $40 million in 1981 compared to $39.4 million in 1980. Much of the expenditure was for drilling and advanced stages of exploration such as underground evaluation. Lead-zinc, silver and tungsten exploration continued at a high level. Little effort was expended on uranium and copper exploration. The effects of the general economic recession and low metal prices are expected to significantly reduce exploration expenditures in 1982 from previous levels. Because tungsten markets have remained relatively stable and prices are relatively firm, exploration should continue at a strong pace. In 1981 there were 11 292 quartz claims, 7 160 placer claims and 597 placer leases registered.

### *Northwest Territories*

#### Mining Production

Metallic mineral production in the Northwest Territories during 1981 was valued at $456 million compared to $435 million during 1980. Production came from nine mining establishments that produce zinc, lead, tungsten, gold, silver, and copper. Lead and zinc accounted for 73 per cent of production value, while gold accounted for 14 per cent and tungsten 9 per cent. The mines are: Pine Point Mines Ltd. (zinc, lead); Giant Yellowknife Mines Ltd. (gold, silver); Cominco's Con Mine (gold, silver); Camlaren Gold Mines (gold, silver) Canada Tungsten Mining Corporation (tungsten); Terra Mining and Exploration Ltd. (silver, copper); Echo Bay Mines Ltd. (silver, copper); Cullaton Lake Gold Mines Ltd. (gold) and Nanisivik Mines Ltd. (zinc, lead, silver).

In 1981, the Northwest Territories accounted for 3.3 per cent of the value of Canadian metallic mineral production. This accounted for 100 per cent of the tungsten, 23.8 percent of the lead, 22.5 per cent of the zinc, 7.4 per cent of the gold and 3.1 per cent of the zinc produced in Canada. There were 2 085 persons employed by the producing mines or 9.2 per cent of the Northwest Territories' work force.

#### Mineral Exploration

Mineral claims staked and recorded in the Northwest Territories during 1981 with comparative figures for 1980 are as follows:

| | 1981 | | 1980 | |
|---|---|---|---|---|
| Districts | Claims Recorded | Area (ha) | Claims Recorded | Area (ha) |
| MacKenzie | 539 | 282 202 | 487 | 306 633 |
| Arctic & Hudson Bay | 479 | 381 514 | 773 | 534 552 |
| Nahanni | 23 | 8 726 | 71 | 25 244 |
| Total | 1 041 | 672 442 | 1 331 | 886 429 |

Mineral exploration continued at a high level in 1981 with expenditures estimated at approximately $50 million. At year end it was evident that exploration activities would decline substantially in 1982 because of low metal prices and the oversupply of uranium in world markets.

Exploration was principally directed to the discovery of uranium, gold and base metal deposits. Total surface diamond drilling exceeded 180 thousand metres. Uranium exploration was conducted in regions of Proterozoic sedimentary rocks including the Bear structural province, Thelon — Dubawnt — Baker Lake — Amer Lake region, Nonacho Basin and East Arm Great Slave Lake fold belt. Exploration for gold in veins, shear zones and iron formations continued to be concentrated in Slave Province and the Kaminak — Rankin Subprovince in southern Keewatin District. Known gold bearing quartz veins in slave Province, northeastern Mackenzie District, including the Ptarmigan, Salmita, Bullmoose Lake, Ruth, Diversified, North Inca and Arcadia properties were explored. Base metal exploration continued at a respectable level in 1981.

## Northern Economic Planning Directorate

### *Forecasting and Analysis Division*

***Responsibilities***
The Division analyzes the structure and function of the economies of the N.W.T. and the Yukon. Specifically, it analyzes a number of variables and provides five-year economic forecasts. It also assesses the probable socio-economic and demographic effect of economic events.

***Review 1981-82***
The Division was established in October 1981 and is a result of a reorganization of the former Data Management Division, which was responsible for collecting and interpreting data required for economic planning and evaluation.

The Forecasting and Analysis Division has been working almost exclusively on five-year economic forecasts and on a study of the economic effects of taxing certain employment benefits payable to workers in the North.

***Plan for 1982-83***
It is anticipated that the study of taxation of northern employment benefits will be completed within the fiscal year. The workload will then become increasingly oriented toward economic forecasting.

### *Transportation and Communications Division*

***Responsibilities***
This Division plans and develops transportation and communications policies and analyzes transportation projects to determine their social and economic effects.

***Review 1981-82***
The Division participated in reviewing several transport policy documents and assessed applications from northern resource developers for financial assistance to build their transportation infrastructures. The Division prepared a paper on cost recovery (based upon user fees) for roads built to service resource development projects.

Terms of Reference for a survey of traffic on the Dempster Highway and for a Mackenzie Delta transportation study were developed. The Division also co-ordinated the Department's involvement in the October 1982 Transportation Conference, and participated in reviewing the Arctic Air Facilities Policy.

***Plan for 1982-83***
The Dempster Highway traffic survey will be begun in co-operation with both Territorial Governments. The Division will assess the transportation infrastructure necessary to re-supply projects in the Beaufort Sea and Mackenzie Delta. Co-ordination of the Department's responsibilities for the Arctic Airports Program will continue, as will Departmental input in the co-sponsorship of the Northern Transportation Conference. Finally, the Division will review the statistics on northern transportation to determine how it can be improved.

### *Native Economy and Renewable Resources Development Division*

***Responsibilities***
The Native Economy and Renewable Resources Development Division was established during 1981-82. It provides a focal point for the Department's stated objective of balancing the interests of natives and non-natives in developing the resources and economy of the North.

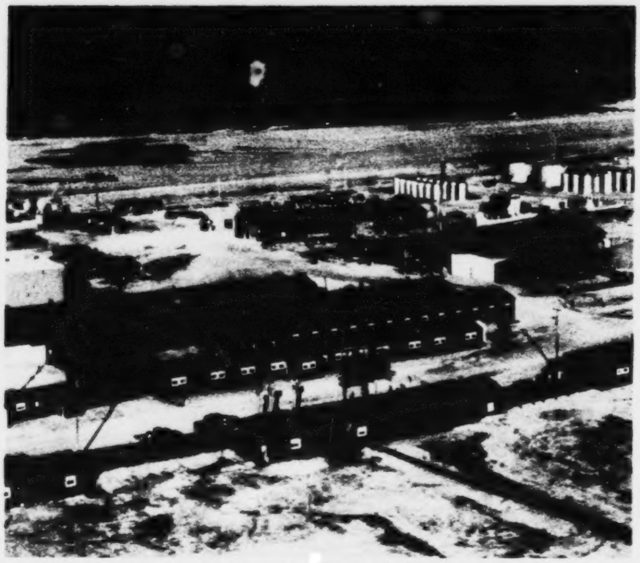
***Review 1981-82***
During 1981-82, the Division supported resource harvesting studies by the Baffin Region Inuit Association and, in the Keewatin, by the Inuit Tapirisat of Canada. It also held informal discussions with the Dene Nation and the Métis Association of the N.W.T. relating to similar studies in the Mackenzie Valley.

The Division has helped the Métis Association of the N.W.T. and the Council for Yukon Indians to establish corporations to promote native participation in northern economic and social development. In addition, the Division funded a major study of northern native development corporations. The study's purpose was to determine the scope and impact of these corporations.

***Plans for 1982-83***
The Division will continue to encourage and assist native participation in economic development. It will also continue to fund resource harvesting studies.

### *Non-Renewable Resources Development Division*

***Responsibilities***
The Non-renewable Resources Development Division performs the lead role in planning, developing and implementing mineral-related policies and carries out both short-term and more detailed studies of the economic and financial aspects of mineral development and specific mining projects in the North. It also monitors mining projects to ensure that they contribute to meeting government objectives. Finally, the Division carries out basic research on mineral-related issues and advises senior management on the development of non-renewable resources in the North.



Aerial view of Resolute Bay Airport, service buildings, dormitory-type hotel and government buildings; airplanes near oil storage tanks in background. Resolute Bay, Cornwallis Island, N.W.T. Photo by George Hunter 1974.

### *Review 1981-82*

The Minister announced that the Department would be developing a Northern Mineral Policy. This Comprehensive policy will take into account issues such as resource development, environmental protection and native land claims. The Division also consults with Territorial Governments, industry and other interested groups on matters relating to developing renewable resources. It has also initiated a number of both in-house and contracted-out studies.

The Division participated in various planning studies and in evaluating consultants' reports on the construction of roads and their effect on the Macmillan Pass region.

Monitoring of major mining projects such as Arvik and Nanisivik is continuing. The Division assessed the extent of Nanisivik ore reserves in order to determine whether it will remain productive for the length of time planned.

In the summer of 1981, the Division set up an inter-departmental group to assess a second feasibility study submitted by Cyprus Anvil on the development of a lead-zinc smelter in the Yukon. This study indicated that it would not be commercially feasible to develop a smelter under present conditions.

The Division's mining cash flow model (CASHIM) was improved to allow greater flexibility in its use.

The Division is reviewing Territorial Royalty Regimes. A number of amendments are being considered and new proposals for discussion with all interested parties will be developed.

### *Plan for 1982-83*

After the Northern Mineral Policy has been formulated, the Division will develop strategies for implementing it. The Division will also participate in implementing the National Mineral Policy, and will continue to plan and evaluate new mining projects in both Territories. It will continue to work with Territorial Governments and the mining industry to evaluate new proposals for mineral processing in the North.

## *Energy Planning Division*

### *Responsibilities*

The Energy Planning Division develops policy covering all forms of energy in the North. Work has focused on developing cost-effective alternatives to petroleum-based energy, upon which the North relies to a great extent.

The Division works closely with federal government agencies and the Territorial Governments to identify major energy concerns and to develop suitable northern energy programs. It provides policy input and analysis on the supply of electric power and reviews for the Minister the plans and objectives of the private corporations, federal agencies and others who are involved in providing electricity to the North.

### *Review 1981-82*

Two subsidies, the Commercial Power Rate Relief Subsidy, and the Federal Power Support Program were extended to March 31, 1982. There are now three energy subsidies, including the existing Federal Power Support Program.

A task force, formed to prepare a northern energy strategy, completed its report in the spring of 1982. Representatives from each of the two Territorial Governments, the Department of Energy, Mines and Resources, the Northern Canada Power Commission and the Department of Indian Affairs and Northern Development were members of the task force. The group made significant progress toward developing a Northern Energy Policy. Developing this Policy represented the Division's major effort during the year and led to the announcement of new policy initiatives by the Minister.

The Division has worked closely with the Northern Canada Power Commission in the analysis of the proposed 20 megawatt hydro project at Whitehorse. Toward the end of 1981, the Treasury Board gave final approval for the $58 million installation.

### *Plans for 1982-83*

In the forthcoming year, the Division will emphasize studies of local energy resources, conservation, off-oil conversion, and participation in demonstration projects for alternative energy developments in remote communities. It will also begin studies of future hydro projects.

## Northern Roads and Airstrips Directorate

*Responsibilities*
The Directorate has program and policy responsibility for developing roads in the North. It emphasizes socio-economic, financial and environmental aspects when planning new roads. Responsibility for maintaining and managing them has been transferred to the territorial governments.

*Review 1981-82*
By 1983, the Liard highway will link Fort Nelson, B.C., on the Alaska Highway with the Mackenzie Highway, near Fort Simpson, N.W.T. Construction work on the highway continued this year, bringing the amount of subgrade completed to 164 km. The Directorate has made special efforts to arrange small contract packages for highway construction so that opportunities will be available for small northern contractors. Construction contracts have been awarded for the section from km 164 to 208, which should be completed this year.

Hire North, an agency of the Government of the Northwest Territories was established in 1972 to provide training and employment in highway construction to native people. Workers with Hire North are building the section between km 208 and km 254.5. The undergrade is scheduled for completion in the fall of 1982.

The Dempster highway runs 674 km northward from Flat Creek (near Dawson), Yukon, to meet the Mackenzie Highway, 63 km south of Inuvik, N.W.T. Future work on the highway will involve gravelling, reconstructing older sections and replacing temporary river crossings. A committee of representatives of the Territorial Governments is carrying out a management plan that will permit the highway to be used throughout the year with as few adverse environmental effects as possible.

The subgrade of the Carcross-Skagway Road has been completed, although guide rails and delineators have yet to be installed. It was officially opened in the summer of 1981. The Shakwak Project continued, involving the reconstruction and paving of both the Haines Road from the Alaska/British Columbia border to Haines junction, and the Alaska Highway from Haines Junction to the Yukon/Alaska border. The project began in 1977 as a joint program of Public Works Canada and the United States Federal Highways Administration. It was expected to have been completed in ten years at an estimated cost of $200 million. Since the U.S. Congress has approved only $56 million for the Project,work has been limited to the reconstruction of the Haines Road. No further contracts will be awarded until more funds are approved.

The North Canol Road extends 235 km northeastward from the Robert Campbell Highway, near the community of Ross River, to the Macmillan Pass on the Yukon-N.W.T. border. In 1980, mining companies intending to develop properties at or near the Macmillan Pass, asked that the North Canol road be upgraded in order to allow ore trucks to use the route. Feasibility and planning studies were started in 1981.

The Northern Resource Roads Program provides financial assistance to companies building initial and permanent access roads to resource development areas. Under this Program, Cattermole Timber Ltd. has applied for assistance in constructing a permanent access road from the Alaska Highway to its timber stands in the Liard River watershed.

## Socio-Economic Agreements Directorate

*Responsibilities*
The Directorate is responsible for negotiating and implementing General Development Agreements in both Territories, their subsidiary agreements, and other federal/territorial economic agreements. The Directorate also develops policies and plans to provide maximum socio-economic benefits to all northern residents from economic development. Its work involves creating mechanisms to ensure that northerners are adequately consulted on, and involved in, economic development activities. The Division works to create opportunities for training, employment and northern business, and to minimize any adverse social and cultural effects of economic development.

*Review 1981-82*
The directorate completed Phase 2 of a study on the establishment of native development corporations in the northern Territories. It continued to assess the economic implications of native land claims. It also carried out preparatory work for transferring the administration of the Yukon Small Business Loan Fund to Yukon, extended the Subsidiary Agreements on Tourism Development and Renewable Resource Development in Yukon by one year and worked on the development of a Canada/Northwest Territories Subsidiary Agreement on Area and Community Economic Development. The socio-economic requirements for the Norman Wells project were developed in consultation with territorial and company officials. As well, the socio-economic policies and plans of a number of proposed mining projects were kept under review. The Directorate also worked with COGLA in planning for the Northern Benefits requirements within the Canada Benefits Package.

*Plans for 1982-83*
The Directorate will be involved in negotiating and implementing a number of economic development agreements in both the Yukon and Northwest Territories. These activities will involve umbrella agreements in each Territory and subsidiary agreements on priority programs for economic development.

The Directorate will transfer administration of the Yukon Small Business Loan Fund to the Yukon. It will be involved in renegotiating all existing petroleum exploration agreements and will negotiate commitments to maximize Northern Benefits in each new agreement.

Finally, the Directorate will continue to advise on and monitor the socio-economic aspects of mining projects, the Norman Wells project, the Beaufort Sea and other proposed major development projects.

## Indian and Inuit Affairs Program

***Responsibilities***

The Indian and Inuit Affairs Program helps Indians and Inuit in the Yukon Territory and Northwest Territories to achieve their cultural, social and economic goals. The Program works in co-operation with native groups and the Territorial Governments.

### *Headquarters*

***Review 1981-82***

A total of $143 000 was allocated in the Yukon Territory and $61 300 in the Northwest Territories during the 1981-82 fiscal year for the Band Training Program. In the Yukon Region, the Program emphasized an approach to community development and band management that is sensitive to the native culture. A "distant education" pilot project to satisfy the special educational requirements of native northerners was developed and field-tested. The project, which cost $24 000, consisted of individual study programs, combining both home study assignments and group sessions in a wide range of technical, vocational, academic and program-oriented skills. The Band Training and Advisory Services Directorate also provided $175 000 for a social action program for the Whitehorse Villge Relocation Project.

In the Northwest Territories, band training initiatives were directed primarily to chiefs and councillors. The training included workshops in economic development, core funding, and financial programs. These workshops also covered audit work and local government activities being carried out for the benefit of Indian leaders. Field trips enabled leaders to familiarize themselves with the activities of their counterparts in other bands.

***Plans for 1982-83***

A study to establish a broadcasting system in the North is underway; $15 000 in the Yukon, and an additional $15 000 in the Northwest Territories have been set aside for this purpose.

Band Training will continue to sponsor CESO (Canadian Executive Services Overseas) services in the Yukon, Volunteers from this organization currently assist in socio-economic development projects.

### *Resource Development Impacts Directorate*

***Review 1981-1982***

The Resource Development Impacts Directorate was established in 1981-1982 to respond to the concerns of Indian people about major resource development. In 1981-1982 Indian bands in the Yukon, British Columbia and Northwest Territories were provided with funding to enable them, by planning and organizing in advance, to deal more effectively with the impacts of major resource development.

In the Yukon, the Directorate provided the Ross River Band with financial assistance and technical advice to assist them in their negotiations with Yukon Barite Ltd. Negotiations were aimed at reaching a comprehensive agreement covering the development of a small barite quarrying operation and a grinding mill. Yukon Barite Ltd. has invited the Ross River Band to participate in the exploitation of its barite deposit north of the Indian community. The negotiations involve equity share participation, affirmative employment action, employment training programs and preferential sub-contracting.

The Ross River Band was provided with financial and technical advice to help it to deal with the effects of a second resource development project — Canada Tungsten's new tungsten mine and milling operation in the Macmillan Pass area. The Band's concerns are being considered in the development scenario.

In northern British Columbia, the Lower Post Band was provided with funds to help its members to deal with the impact of the proposed damming of the Liard River by B.C. Hydro. Studies are being conducted to assess the potential effects of the project, and findings will be presented at various federal and provincial hearings and conferences.

In the Northwest Territories, a number of current and proposed resource developments will affect Indian residents. The proposed B.C. Liard River Hydro project will also affect the Territories, as will the Slave River Hydro project. Other projects, such as the Norman Wells Pipeline, the Arctic Pilot project and Beaufort Sea exploration, are reported under the Northern Affairs Program. The Indian and Inuit Affairs Program regional office in Yellowknife continues its efforts to ensure that Indian people are aware of proposed developments that are likely to affect them.

***Plans for 1982-1983***

The Resource Development Impacts Directorate will provide advice and funding to Indian people whose communities will be affected by resource developments.

## *Regional Offices*

### Yukon Territory

***Responsibilities***
The Yukon Region of the Indian and Inuit Affairs Program carries out administrative functions for approximately 3 200 status Indians in 12 bands in the Yukon and 3 in northern British Columbia. The Program helps Indian people achieve their cultural, social and economic goals and ensures that Canada's constitutional and statutory obligations and responsibilities to them are fulfilled.

### *Economic and Employment Development Program*

***Review 1981-1982***
The Economic and Employment Development Program assisted Indian people to develop and expand economically-independent businesses and to create jobs. The Program provided loans, contributions and counselling services for these purposes.

Yukon resident Brenda Chambers models a parka produced by the Yukon Indian Arts and Crafts Co-operative. The Co-operative received $80,000 (dollars) in special project funding from the Yukon Region, Indian and Inuit Affairs program, 1981-1982. (#P4)

During the past year, loans totalling $116 800 and contributions totaling $215 000 were made to Indian entrepreneurs. This resulted in the development of new businesses, the expansion and modernization of others and permitted Indian people to continue to pursue traditional activities such as hunting, fishing and trapping.

In 1981-1982, the Program disbursed $100 000 to two bands to promote their involvement in major resource development.

An additional $80 000 in special project funding was provided to the Yukon Indian Arts and Crafts Co-operative.

Throughout 1981-1982, economic and employment development were priorities in the Yukon Region. Accordingly, the Program continued to provide the support necessary to involve Indians in the long-term growth of the economy of the Yukon.

***Plans for 1982-1983***
In 1982-1983, the Economic and Employment Development Program will work to support Indian involvement in major resource development ventures. It will encourage long-term planning to enable Indians in the North to share in the economic and employment development opportunities presented by similar projects.

Regular monitoring of ongoing projects, securing appropriate advisory services and carrying out analyses of certain problem areas will continue.

A number of employment development initiatives were taken early in 1982, and as a result, it is expected that several new businesses will be established in all sectors in 1982-1983, and that a significant number of employment training opportunities will become available.

### *Social Development Program*

***Review 1981-1982***
In 1981-1982, all Yukon bands, with the exception of the Atlin Band in northern British Columbia, were administering their own social development programs.

These bands had assumed additional responsibility for managing rehabilitation funds for operating alcohol treatment programs.

In 1981-1982, the major focus of the Social Development Program was to increase the administrative capacity and effectiveness of the regional office. A Data Base Information System was developed to permit the gathering and retrieval of accurate, verifiable information to support program activities. Band staff training efforts were increased, and training in new information reporting procedures was conducted. Three workshops for band social services workers were held throughout the year. In 1982-1983 the Program will increase the level of training, the frequency of field visits and make more consultative services available to participating bands.

The Program initiated discussions with bands and the Yukon Government to increase Indian participation in Child Welfare and Adult Care Activities in the Region. These discussions have formed the basis for more work in this area in 1982-1983. Similarly, the Program has launched discussions with bands, the Yukon Government, Health and Welfare Canada and the RCMP to clearly define service interfaces between governments and agencies for next year.

***Plans for 1982-1983***
The Program will continue to support the Human Resource Development Program (HRDP), being promoted by the Council for Yukon Indians. The HRDP is an education concept designed to provide needed skills in the community through a degree program delivered locally. It is hoped that this Program will result in bands being able to demonstrate more and better skills in managing program and funds, and in developing comprehensive community plans. The Program was funded with contribution funds made during 1981-82.

*Education Program*

***Review 1981-1982***
Elementary and secondary education programs are the responsibility of the Yukon Government. However, post-secondary education, adult and occupational skills training programs are of direct concern to the Indian and Inuit Affairs Program itself.

In 1981-1982, 26 students attending universities, colleges and technical training institutes received financial assistance that enabled them to pursue courses in Business Administration, Law, Education and Broadcasting.

In the past year, 70 students were enrolled in Yukon Hall, the Region's only student residence, in order to attend in-school programs in Whitehorse. The band-administered group home program again provided residence placements for students attending school in Liard and Ross River. In addition, 36 students were placed in boarding homes in Whitehorse and Watson Lake.

In 1981-1982, financial assistance was provided for two courses in truck-driving, held in Whitehorse and Carcross respectively.

***Plans for 1982-1983***
Plans for 1982-1983 include continuing support for education programs and involvement in the Human Resource Development Program. More long and short-term occupational skill development at the community level is also planned.

*Local Government Program*

***Review 1981-1982***
The Yukon Region's Local Government Program made funding available for community services administered by 15 Yukon bands. Local government programs provided funds for various purposes such as core funding, covering overhead payments, firefighting equipment, water and sanitation facilities, and programs in recreation, community planning and policing.

The Local Government Program provided capital funding to band councils for the construction of housing and other band buildings, for community services and for surveying of land suitable for Indian housing. In 1982-1983, the Yukon Region will work closely with the Canada Mortgage and Housing Corporation to increase the number of houses built in communities and to create more opportunity for home ownership.

In 1981-1982 the Kwanlin Dun Village Relocation Project advanced to the Treasury Board submission stage, with resources for a social action program being provided to the Kwanlin Dun Band Council in preparation for this Project.

During 1981-1982, two bands in the Yukon Region were involved in a pilot Remote Learning-Training Program in conjunction with the International Correspondence School. The Program, designed to provide training in band management for band members, was successful and may be used across Canada in 1982-1983.

***Plans for 1982-1983***
Bands will continue to control and manage municipal services. A high priority has been placed on comprehensive community planning and training for band members.

*Reserves and Trusts*

***Review 1981-1982***
A committee was formed to review problems associated with the present occupation of Yukon lands by native people. This committee addressed a number of concerns expressed by the Council for Yukon Indians. Many more problems are now being resolved as part of the land selection process during land claim negotiations.

***Plans for 1982-1983***
The Reserves and Trusts Program during the next year will continue its work to identify, document and resolve land related problems.

Northwest Territories

***Responsibility***
The Regional Office of Indian and Inuit Affairs in Yellowknife consults with sixteen band councils, native associations and the Northwest Territories Government to promote the social and economic development of Indian bands.

Programs involve carrying out the Government's annual treaty obligations to bands and individuals. Core funding is made available to band councils to enable them to develop an administrative capability. These funds are also used to provide administrative and financial management advice to the band councils.

The Economic Development Program provides advice and financial assistance to individuals to encourage socio-economic development and to enable them to communicate with the various government departments and private organizations involved in economic development in the North.

***Review of 1981-82***

Band councils continued to improve their management and administrative capability. Fourteen band councils hired managers to assist with business development initiatives and in the administration of job creation programs. The Economic Development Section continued to provide financial advice to individuals, associations, native groups and band development corporations in the area of business development. The Program continued to focus its attention on socio-economic planning at the community level by supporting the establishment of band economic development committees. Nine such committees have been formed. The Program continued to provide administrative training to band secretaries and managers.

***Plans for 1982-83***

Socio-economic development will continue to be the main concern of the Regional Office. Priorities include working more closely with Dené leaders and chiefs in the major areas of program development, training capability and expertise in business management. The funding and administrative support of the band councils will be based upon their stated priorities in the area of general socio-economic development.

## Administration Program

### Technical Services and Contracts Branch

***Responsibilities***

The Technical Services and Contracts Branch is responsible for providing professional and technical expertise in planning, designing, procuring, maintaining and operating real property and other departmental assets. The Branch also draws up and administers contracts for obtaining the goods and services associated with these activities. Finally, the Branch develop the policies, standards, guidelines and systems needed to carry out its responsibilities in these areas.

The Transportation Division, which is part of the Branch, provides engineering services for managing the planning, design and construction of northern highway systems. It also advises on procuring, operating and maintaining the Department's mobile equipment (such as vehicles and construction machinery) and its marine facilities. Through its field office in Edmonton, the Division monitors related work of other departments and agencies.

The Buildings Division provides technical support to the Northern Program on building construction, operation and maintenance.

***Review of 1981-1982***

Construction work on the Liard Highway continued, bringing the amount of subgrade completed to 200 km.

Work on the Dempster Highway continued, including the construction of the Peel River cable ferry and haulout facilities.

The grading and surfacing work on the Carcross-Skagway Highway was completed in the vicinity of Carcross.

The Branch began planning studies for the proposed reconstruction of the Canol Road from Ross River to Macmillan Pass.

Three staff houses were constructed during the year; two at Pangnirtung and one at Baker Lake.

These houses demonstrate northern housing technology developed over several years and incorporate design, construction and operational features specifically suited to the northern climate. The houses are cost-effective, and were built to conserve energy, both when under construction and in actual use.

The elevated foundation design takes changing permafrost conditions into account. Floors in the houses can be adjusted to remain level when these changes in the permafrost occur, while allowing snow to blow clear of the building.

Tanks for storing water and collecting sewage (when required) are built into a heated enclosure suspended below the ground floor and are easily accessible for service.

A constant-flow air-recirculating system provides a constant flow of fresh heated and humidified air through diffusers under each window. These diffusers, together with quadruple-glazed fixed sash windows eliminate condensation and permit clear viewing through the windows, even under the most extreme weather conditions.

***Plans for 1982-1983***

In general, plans include the completion of the Liard Highway grading, the re-design of the Canol Road, and the continued rehabilitation of the Dempster Highway.

The evaluation of the performance of one of the Frobisher Bay staff houses constructed in 1980 will continue. This house was equipped with a three-panel solar domestic water heater when it was built. The solar system, together with the building's heating system, will be monitored for performance using specially installed instruments to measure temperature and humidity, as well as fuel oil and electrical consumption.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 113 207 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Protection of the Environment | 30 905 | 27.3 |
| Economic Growth | 27 932 | 24.7 |
| Quality of Life | 19 856 | 17.5 |
| Administration and Support | 18 553 | 16.4 |
| Social and Cultural Development | 11 207 | 9.9 |
| Evolution of Government | 2 630 | 2.3 |
| Leisure and Recreation | 1 769 | 1.6 |
| Sovereignty and Security | 355 | 0.3 |

# Department of Justice

**_Responsibilities_**

The Minister of Justice appoints judges to the Territorial Supreme Courts, while the Department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the Criminal Code, other federal statutes and Territorial Ordinances. The Department also shares the costs of legal aid and the native Courtworker Program. It also helps to compensate victims of violent crimes in the Territories. The Department's northern offices are expanding to enable them to provide legal services in the civil litigation field to other federal government departments involved in legal disputes.

**_Review 1981-82_**

Work to consolidate the delivery of legal services under the aegis of the Northwest Territories Legal Services Board continued during the year. Native courtworker services in the Northwest Territories also fall within the jurisdiction of the Legal Services Board.

Payments totalling $440 425 were made to the Northwest Territories, including $261 300 for legal aid, $23 425 for compensation to victims of violent crimes and $155 700 for native courtworker services.

Payments totalling $115 321 were made to the Yukon Territory, including $50 000 for legal aid, $18 876 for compensation to victims of violent crimes, and $46 445 for native courtworker services.

**_Plans for 1982-83_**

During 1982-83, it is expected that the existing legal aid arangements in the Territories will be examined with a view to reflecting changes that may be made as a result of the current legal aid negotiations with the provinces.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 1 024 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 1 024 | 100.0 |

# Labour Canada

***Responsibilities***

Labour Canada administers the Canada Labour Code and is responsible for maintaining a balanced legislative framework covering industrial relations in the federal jurisdiction. It also establishes minimum standards for wages, working conditions, safety and health and helps to resolve problems facing individuals or groups in these areas. Labour Canada works to minimize and resolve labour-related conflict within the Department's legislative framework.

Employees or employers engaged in any provincial, national or international work or business fall within Labour Canada's jurisdiction.

Because labour affairs are becoming more and more complex, Labour Canada maintains offices in major centres across the country to make the Department's services more accessible to those who need them. These offices have primary responsibility for implementating departmental programs, while maintaining close liaison with headquarters.

**Mediation and Conciliation Services**

The Mediation and Conciliation Branch, through the appointment of Conciliation Officers, Conciliation Commissioners, and Mediators, provides a third-party to help resolve industrial disputes in the federal jurisdiction (including the Territories).

This activity covers collective bargaining breakdowns and other problems with labour-management relationships.

***Review 1981-82***

During the fiscal year, the service handled 13 collective bargaining disputes affecting territorial employees. Eleven of these disputes were handled to finality, through either conciliation or post-conciliation negotiations. At fiscal year-end, two disputes were pending. These involved companies engaged in mining, road and water transportation and construction.

**Arbitration Services**

The Branch plays a role in resolving disputes arising over the interpretation, application or alleged violation of the provisions of collective agreements. During fiscal year 1981-82, Arbitration Services received three requests from the Northwest Territories and the Yukon for ministerial appointments of arbitrators and arbitration board chairmen. Two arbitrators were appointed and the remaining case was still pending as of March 31, 1982.

**Mountain Region**

The following summarizes the activities carried out in the North (Yukon Territory and Northwest Territories) by the Whitehorse Office of Labour Canada, Mountain Region. This report covers the 1981-82 year administration of Part III and Part IV of the Canada Labour Code, the Treasury Board's Occupational Safety Policies, the standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act.

A Labour Canada office has been operating in Whitehorse, Y.T. since August 2, 1978. It is staffed by a Labour Affairs Officer and a support staff. The office is designed to serve both the Yukon and Northwest Territories. A Zenith toll-free line between Whitehorse and six major N.W.T. communities was installed to provide better service to the area. As required, staff from both the Vancouver and Edmonton offices supplement the office's activities.

**Federal Contracts**

a) Inspections of Government Contracts (Fair Wages and Hours of Labour Act); During the fiscal year, the Labour Affairs Officer from Whitehorse investigated eight complaints (of these, three originated in the Northwest Territories and five in the Yukon Territory). Wage adjustments were collected from one contractor as a result of these inspections. Violations were corrected and $21 117.86 was recovered for eight employees in the Northwest Territories.

b) Wage Schedules Issued:

| | Northwest Territories | Yukon Territory |
|---|---|---|
| Construction Contracts | 87 | 44 |
| Service Contracts | — | 3 |

c) Annual surveys of construction wages were conducted in the Northwest Territories and the Yukon Territory. These surveys provided enough data on wages to establish prevailing wage rates for inclusion in Labour Conditions Schedules for Federal Government Contracts. These prevailing wage rates are also made available for use by the Yukon Territory Labour Standards Branch and Contracts Tendering Department.

**Part III — Canada Labour Code (Labour Standards)**

It should be noted that the provisions of Part III of the Canada Labour Code do not apply to any local or private work, undertaking or business in either the Yukon or the Northwest Territories. However, as in the provinces, the provisions apply to those businesses or undertakings that usually fall under federal jurisdiction.

During the 1981-82 fiscal year, 48 complaints were investigated under Part III of the Canada Labour Code (Labour Standards), of which 16 were in the Yukon Territory and 32 in the Northwest Territories. As a result of these investigations, $4 838.35 was recovered for 6 employees in the Yukon Territory and $9 388.92 for 9 employees in the Northwest Territories. In the same period, 20 routine inspections were carried out in the Northwest Territories.

**Part IV – Canada Labour Code (Safety of Employees)**

The long-term objective in the Territories is to implement a comprehensive employment safety program that covers employees subject to Part IV of the Canada Labour Code. The Code includes employees in the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV of the Code, the Department is responsible for ensuring that employers doing business with the federal government provide safe working conditions for their staff. In the Federal Public Service, the Department acts as an agent of the Treasury Board in helping to develop and improve safety programs. It also monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

**Summary of Activities — Northwest Territories and Yukon Territory**

In the Northwest Territories, during the 1981-82 fiscal year, the Department carried out 33 safety visits involving complaints, inspections, accident investigations, surveys and the development of the Safety Audit Program. The following industries, companies, Crown corporations or departments, were covered:

1. Banks
2. Highway Transport
3. Telephone Industry (Northwest Telecommunications)
4. Northern Canada Power Commission
5. Canada Post Corporation
6. Parks Canada
7. Airlines
8. Transport Canada
9. Shipping (Northern Transportation)
10. Indian and Northern Affairs
11. Health and Welfare
12. Fresh Water Fishing Corporation

On May 9-10, 1981, the Labour Affairs Officer from Whitehorse represented the Department at the first annual Yukon Federation of Labour Convention held in Whitehorse. The Federation acts as a co-ordinating body for most of the Labour Unions operating in the Yukon Territory.

During September 1981, the Labour Canada office in Whitehorse received a request for a speaker at an annual Women's Conference. Arrangements were made to have a spokesperson from the Department's Women's Bureau attend the Woman & Law Conference. The Conference, held in Whitehorse on September 25-27, 1981, was jointly sponsored by the Committee on the Status of Women and the Whitehorse Women's Centre.

The Labour Affairs Officer in Whitehorse participated in a group presentation for postal employees at the time when the Canada Post Office was making the transition from a federal department to a Crown corporation. The presentation explained how labour laws would affect these workers in the future because of their new status as employees of a Crown corporation.

During 1981, the Department concluded new formal agreements with the Yukon and Northwest Territories. Under the agreements, they will be carrying out technical inspections of boilers, pressure vessels and elevators and escalators in federal buildings. Inspections will be done on behalf of Labour Canada.

**Accident Compensation**

To the end of March 1982, the Department processed 353 claims in the Northwest Territories and 99 in the Yukon.

***Plans for 1982-83***

For the fiscal year 1982-83, the priorities of our office in the Territories will be to continue promoting and establishing safety committees in both the public sector and those parts of the private sector within federal jurisdiction.

**Legislative Analysis Division**

The Legislative Analysis Division collects and analyzes Canadian legislation affecting employer-employee relations and the work environment. The Division issues publications that report legislative developments in various areas such as occupational safety and health, workers' compensation and employment standards adopted in the Yukon and Northwest Territories, and federal legislation applicable in the Territories. It also prepares an annual report for the Canadian Association of Administrators of Labour Legislation (CAALL). This Association brings together representatives of the federal and provincial departments of labour and representatives from the two Territories. Finally, upon request, the Division provides government officials, organizations and individuals in the Territories with information on the labour legislation that exists within the various jurisdictions.

***Plans for 1982-83***

Normal planning to meet responsibilities.

**Employment Relations and Conditions of Work**

*Labour Education*

Labour Canada's Financial Assistance Program provides financial support to legally constituted union organizations in Canada. This support is used for the education and training of existing and potential union leaders, so that they can carry out their union responsibilities and fulfil their community roles effectively.

In 1981-82, the Northwest Territories Teachers' Association was awarded a labour education grant. The Association, which represents its 751 members, received $488.00. The grant was applied to defraying the costs of a two-day conference to familiarize the Association's officers with the negotiation process, methods of handling grievances, government regulations and the structure and objectives of the Northwest Territories Teachers' Association.

***Plans for 1982-83***
Normal planning to meet responsibilities.

*Labour Data Branch*
Every year, the Labour Data Branch surveys the wages, salaries and conditions of work in establishments having 20 or more employees. The October 1981 survey covered 41 establishments in the Yukon Territory and 58 in the Northwest Territories. The survey will be carried out again in 1982.

The Branch continuously maintains information on work stoppages due to strikes and lockouts in the two Territories. In 1981, four work stoppages were reported. They involved 704 workers and a total of 49 426 person-days.

The Branch maintains a file of collective agreements, which includes 68 agreements (excluding agreements in construction) covering some 8 582 employees in the Territories.

***Plans for 1982-83***
Normal planning to meet responsibilities.

*Industrial Relations Information Service (IRIS)*
IRIS is a service intended primarily for those involved in labour relations and collective bargaining. It is a "one-stop" information service for parties on both sides of the bargaining table. They can turn to it for prompt answers to questions on industrial relations.

IRIS available to individuals and organizations in the Yukon and Northwest Territories. They may either call (819) 997-3117 (collect calls are accepted) or write to the following address:
Industrial Relations
Information Service
Labour Canada
Ottawa, Ontario
K1A 0J2

***Plans for 1982-83***
Normal planning to meet responsibilities.

*Quality of Working Life Program*
The Quality of Working Life Program encourages Canadian organizations that promote innovative practices that respond to changing economic and social conditions in the workplace. The Program supports, for example, organizations whose employees participate in decisions that affect them directly, or whose employees and management co-operate to improve working conditions. Program goals include increasing employee work satisfaction, making better use of human resources and improving relations between labour and management.

***Plans for 1982-83***
Normal planning to meet responsibilities.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 557 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Administration and Support | 345 | 62.0 |
| Social and Cultural Development | 150 | 26.9 |
| Quality of Life | 62 | 11.1 |

# Department of National Defence

***Responsibilities***

The Department of National Defence has responsibility for safeguarding the sovereignty and independence of Canada. In the North, the Department protects Canada against threats and challenges to its territorial integrity (including the integrity of the Canadian territorial sea and airspace) and contributes to collective security arrangements with allies in North America and NATO.

DND supplements and supports the efforts of civil departments and agencies of the government in discharging their responsibilities in the North.

## ***Review of 1981-82***

### *Personnel Activities*

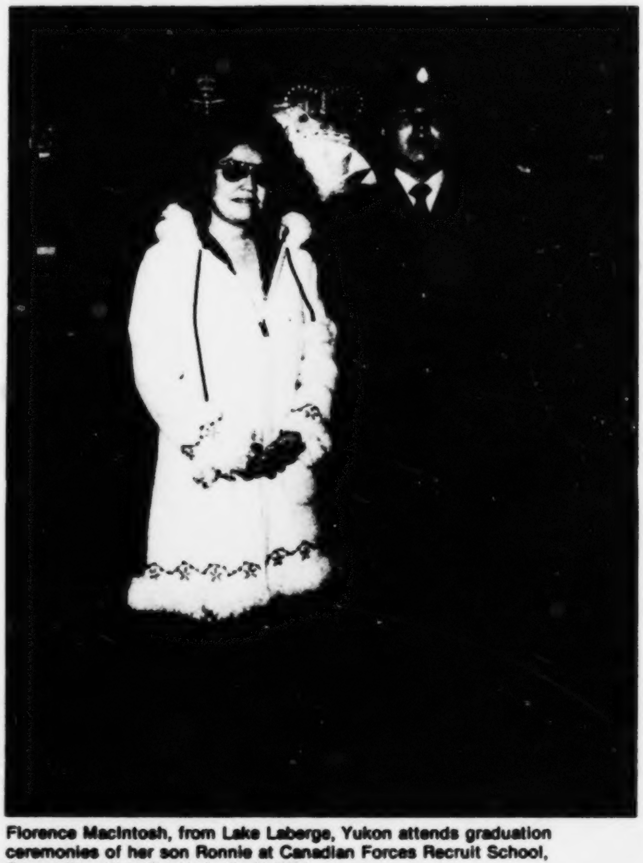
Canadian Forces recruiting teams from Vancouver, Edmonton, Winnipeg and Montreal gave employment and career briefings in twelve communities in the Yukon Territory and the Northwest Territories to ensure that northern residents continue to be aware of the training and career opportunities available to them in the Canadian Forces. Teams visited Whitehorse, Fort Smith, Hay River, Fort Simpson, Yellowknife, Cambridge Bay, Coppermine, Holman, Sachs Harbour, Inuvik, Norman Wells and Frobisher Bay. Twenty-one native applications were received for enrolment in the Canadian Forces. Twelve were subsequently enrolled, and three have since been released.

Native parents from Whitehorse, Watson Lake, Yellowknife, Fort Simpson, Fort Smith, and Frobisher Bay attended graduation ceremonies for their respective sons and daughters at the Canadian Forces Recruit School, Cornwallis, Nova Scotia. The Department of Indian and Northern Affairs provided financial assistance.

The Canadian Forces School of Aerospace and Ordnance Engineering at Canadian Forces Base Borden, Ontario conducted its eleventh consecutive annual seven-month course in aircraft mechanics for native northerners who will be employed by aircraft companies operating in the North.

### *Maritime Forces*

Argus and Aurora aircraft flew approximately 225 hours on Northern Patrols (NORPATS) in the Arctic in fiscal year 1981-82. Conversion from the Argus aircraft to the Aurora accounts for the low total NORPAT hours for the year. The NORPATS normally operate out of Frobisher Bay and Yellowknife, N.W.T. In addition to fulfilling their primary role of sovereignty surveillance, these patrols also met certain needs of various government agencies. For example, during the ice season, Transport Canada ice observers flew on the patrols and carried out ice reconnaissance. Other tasks included photographic work for the Department of Indian Affairs and Northern Development and the Department of Fisheries and Oceans, investigating off-shore oil exploration and drilling activity on the archipelago and reporting movements of animal populations. Scientists and observers from other government departments also flew with the patrols. They carried out activities such as investigating seabird and marine populations in the Beaufort Sea.



**Florence MacIntosh, from Lake Laberge, Yukon attends graduation ceremonies of her son Ronnie at Canadian Forces Recruit School, Cornwallis, Nova Scotia in April 1981.**

### *Land Forces*

During the 1970's, Mobile Command developed an extensive training program aimed at increasing its ability to concentrate forces anywhere in the North during any season and, at the same time, to exercise Canadian Sovereignty in the area. The result of this decade of training was the formulation of the Mobile Command Arctic Training Plan 1980-85.

The Arctic Training Plan emphasizes the development of the skills, experience, procedures and equipment, needed to permit Mobil Command forces to move tactically throughout the Arctic, using either vehicles or helicopters. The plan encompasses four interrelated programs: Exercise SOVEREIGN VIKING, the Scientific Research Support Program, the Arctic Technology Monitoring Program and the Mobil Command Arctic Operational Training Handbook.

Exercise SOVEREIGN VIKING is conducted exclusively in the high Arctic, with emphasis on the lands and seas lying along and north of the Northwest Passage. Two exercises are conducted annually — one during the summer months and the other in winter. The exercises last from eight to ten weeks. During these exercises, a number of long-range patrols mounted in vehicles are deployed from a support base. These patrols are supported by helicopters and long-range communications detachments.

A number of scientific teams have taken advantage of the Scientific Research Support Program. In August and September 1981, three university teams accompanied a SOVEREIGN VIKING exercise. The University of Windsor conducted a study of fresh water plankton in the pools on Cornwallis Island. A team from Memorial University of Newfoundland studied Arctic fish species and conducted a survey of the occurrence of pollutants, and the University of Laval studied the geomorphology and vegetation on Cornwallis Island.

In September 1981, two Mobile Command formations conducted reconnaissance exercises for senior officers. These exercises covered large portions of the North and involved meetings and briefings as well as visits to various communities.

In February 1982, 40 men of the Canadian Airborne Regiment marched from Coppermine to Port Radium. They were accompanied by three members of the Canadian Rangers.

### *Air Forces*

Air Transport Group Hercules aircraft provided weekly service flights in addition to special flights to support the Canadian Forces Communications Stations at Inuvik and Alert. During 1981-82, some 478 954 kg of general cargo were airlifted to Inuvik and 883 174 kg of construction material and general cargo to Alert.

Annual "Boxtop Operations" were conducted in April, August and November 1981. At these times, 399 378 kg of general stores, 2 377 772 litres of diesel fuel, 298 569 litres of JP4 and 88 298 litres of MSE gas were airlifted from Thule AFB, Greenland to CFS Alert.

During 1980-81, Hercules and Buffalo aircraft flew airlift support for various FMC Exercises in the high Arctic, the eastern Arctic and Melville Island areas.

Helicopters from 10 Tactical Air Group supported MCE mapping and charting activities on northern Baffin Island and the installation of microwave sites on Ellesmere Island. A total of 576 helicopter hours were flown in the high Arctic, in support of various aspects of northern development.

The 440 Squadron detachment at Yellowknife, N.W.T. was used for communications and Search and Rescue flights throughout the North.

The Distant Early Warning (DEW) Line, consisting of four main sites and seventeen auxiliary sites, continues to provide a military presence in the Arctic. These military installations stretch from Cape Dyer on the East Coast of Baffin Island to Komakuk Beach near the Alaskan Border. While all sites are operated by civilians under United States Air Force contract, Canadian Forces members are stationed at the main sites, as well as at airfields operated by the Department of Transport at Tuktoyaktuk, Hall Beach and Cambridge Bay.

Air Reserve activities in the north during 1981-82 included flights in the Baffin Island/Frobisher Bay area. These flights involved mapping and charting surveys and transporting militia personnel and cargo to various sites throughout the central Arctic in support of summer training. In addition, Air Reserve personnel transported passengers and equipment for 440 Squadron detachment at Yellowknife. ARAF personnel participated in Exercise Boxtop and provided personnel support to CFS Alert and flew 537 hours in support of a high Arctic project to improve communications facilities in the North.

During 1981-82, the Canadian Forces air demonstration team flew three air shows in the North at Whitehorse, Hay River and Yellowknife.

### *Military Engineering*

Construction activity included relocating the Atmospheric Environment Services (AES) Tank Farm at CFS Alert, and constructing two satellite earth stations and six microwave repeater sites between Eureka and Alert as part of Project Hurricane.

Major maintenance projects were the replacement of boilers and heating system components at CFS Inuvik, and repairs to the Exercise Sovereign Viking Camp at Resolute Bay. At Frobisher Bay, modifications were started on the Heating System of the Nose Dock Hangar.

During the summer of 1981, the Mapping and Charting Establishment (MCE) surveyed an area of approximately 105 000 square kilometres on Baffin Island, north of 68A4 latitude, including Bylot Island. A total of 35 horizontal control stations were established, 34 of which were determined using satellite (Doppler method) data, to geodetic second order standard. A total of 92 vertical control points were established. Low level aerial photography was flown to identify 112 existing and new horizontal and vertical stations. From this data, a total of approximately 120 maps at the scale of 1:50 000 will eventually be produced. Ten surveyors were involved in the survey, supported by ten aircrew and other personnel. Due to Exercise Rendezvous 81, no military aircraft were available. Two Bell 206L Jet Ranger aircraft from Canadian Helicopters Ltd. and a Twin Otter from Kenn Borck Air Ltd. were used for identification photography. Two CH 147 Chinook aircraft supported the fuel caching operation in early June, and four C 130 Hercules airlifts were used for deployment and redeployment.

The Department will provide engineering assistance to EMR for the construction of an ice runway in support of Operation CAESAR 83, which is the study of the Alpha Ridge of the Polar Continental Shelf.

At CFS Inuvik a no-break power supply system for the Operations Building is planned. The heating modifications at Frobisher Bay will be completed.

Maintenance projects at CFS Alert include roofing repairs to the Operations Building, an environmental clean-up, a heat recovery system for the diesel power plant, and an overhaul of the diesel generator.

The Mapping and Charting Establishment will conduct a major survey operation on Baffin Island to complete the Doppler survey of the area. Civilian chartered aircraft will again be used, supported by CF Hercules aircraft.

***Plans for 1982-83***

*Personnel Activities*
Recruiting teams will continue to give military training, employment, and career briefings to native communities in the Yukon and Northwest Territories.

The Department at Canadian Forces Base Borden will offer another aircraft mechanics course for native northerners.

*Maritime Forces*
Tentative plans are being made to deploy an operational support ship and a diving support ship in the North during the summer of 1982.

During fiscal year 1982-83, sixteen Aurora sovereignty and surveillance patrols are expected to be flown in the Arctic. These will involve approximately 500 hours of flying time. Whenever possible, the patrols will continue to be used to provide various services to other government agencies.

*Land Forces*
Mobile Command will continue to carry out SOVEREIGN VIKING exercises as a method of developing and refining techniques for conducting operations in the North. Two reconnaissance exercises will take place in 1982 to acquaint senior staffs with northern communities and activities.

*Air Forces*
Hercules aircraft will continue to provide regularly scheduled service to Alert, Inuvik, Yellowknife and Whitehorse. They will also be used during the spring, summer and early fall to assist in the re-supply of Alert and various land forces exercises in the North. Both Hercules and helicopter aircraft will be used to carry out mapping and charting work in the high Arctic.

*Military Engineering*
The construction of a new Personnel Services Building for CFS Alert will begin with work on the footings and foundations. A freight storage building will be constructed at Alert. Approximately 10 km of road will be built in the Eureka area under Project Hurricane.

## Research and Development

***Responsibilities***
The Research and Development Branch formulates and implements departmental scientific policy and manages the Department's R&D program. The Branch is responsible for finding solutions to scientific and technological problems related to departmental operations and equipment. Research is undertaken on a variety of projects aimed at acquiring knowledge relevant to military operations in the North and testing and evaluating equipment and systems proposed for use in Arctic or other adverse environments.

***Review 1981-82***
The internal R&D program of the Department is conducted in its six research establishments. During 1981-82, five of these establishments were involved, to some degree, in research related to Northern activities, and a number of contracts were awarded to Canadian universities and industries in support of this research. In addition, the Military Engineering Research Group at the Royal Military College in Kingston (RMC/MERG) carries out research on problems associated with engineering in a Northern environment.

The Defence Research Establishment Pacific (DREP) carries out research aimed at developing effective methods for detecting submarines in Arctic waters. Activities in the North in 1981 included small expeditions to Nansen Sound in April and September and a large experimental operation in Barrow Strait and Jones Sound in August and September carried out with the help of the Canadian Coast Guard Ice Breaker CCGS J.A. MACDONALD. The work in Nansen Sound was performed by small field parties operating from the DREP camp located on the smaller Fjeldholmen Island. The work in Barrow Strait and Jones Sound was carried out by a party of DREP scientists operating from the CCGS J.A. MACDONALD, from existing DREP camps located at Gascoyne Inlet and on islets off Grise Fiord, and from a new camp established on the beach near Cape Hawes at the western end of Jones Sound.

A continuing activity initiated by the Defence Research Establishment Valcartier (DREV) consists of determining how storing the CRV7 rocket motor in a variety of climatic environments for long periods of time affects its service life. Motors are being stored at Canadian Forces Station (CFS) Alert as part of the trials. In support of the Department of the Environment, DREV completed work on an incendiary device for disposing of waste oil in the Arctic. This technology was transferred to industry. Development work was started on a prototype smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations[1] in the Arctic environment.

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[1] In a "parachute extraction" operation, parachutes are used to pull or "extract" loads from aircraft flying at low altitude.

Scientists in the Protective Sciences Division of the Defence Research Establishment Ottawa (DREO) are responsible for carrying out research on clothing and protective equipment for use in harsh environmental conditions. During 1981-82, research activities included: basic studies of heat and vapour transport in insulation; investigations to determine most effective distribution of insulation within sleeping bags and garments; design and testing of face masks for use in cold, windy conditions; and work on the "architecture" of tents and the design of inflatable structures.

DREO participated in Exercise Sovereign Viking in 1981 by distributing flashlights containing lithium-sulphur dioxide batteries for evaluation by Canadian Forces personnel working in the field. From questionnaires completed by users, it was evident that the lithium batteries lasted longer than standard issue batteries. DREO has recently been actively engaged in the development of a lithium battery for the AN/PRQ-501 Personnel Locator Beacon (PLB). It will provide the Canadian Forces with a PLB capability to meet the rigorous search and rescue requirements imposed by the severe climatic conditions of Canadian winters. The battery consists of four C-size lithium-sulphur dioxide cells and combines the attributes of small size, light weight, and high energy density with a -40° operational capability and a minimum shelf-life expectancy of four years. The battery unit is now in the pre-production stage of manufacture and should be available for use in 1983.

Over the past several years, the Defence Research Establishment Suffield (DRES) has sponsored work at the University of Alberta in northern geotechnical engineering. This work has involved investigations of the criteria for predicting the behaviour of underground caverns in permafrost and vibratory methods for driving piles and anchors in permafrost. This work has now been concluded and no further activity is planned in the foreseeable future.

Various research activities related to testing military vehicles in northern terrain continue to be pursued by DRES, both in-house and under contract. Specific activities include testing the performance of vehicles on snow and muskeg; terrain analysis, including investigations of remote sensing techniques for northern terrain and snow; and starting and operating military vehicles in cold regions.

Scientists at the Defence and Civil Institute of Environmental Medicine (DCIEM) carry out research designed to improve the protection and performance of military personnel. The Institute's activities include programs to investigate human response to stresses, such as extreme heat or cold, high altitude, and acceleration; physical fitness; aerospace life support systems; infection and immunity; and deep diving. Research projects also include behavioural and bioscience investigations relating to air, land and sea operations.

During 1981-82, DCIEM continued to study the physiological effects of exposure to cold under controlled laboratory conditions. The cold air climatic chamber was used extensively for investigating the fat loss of humans when exercising in the cold (PROJECT FLIC). The technique of breathing warm air during these exposures was developed and tested for its effectiveness in reducing the severity of the cold stress/exercise strain relationship. The investigation of human hypothermia continued and the effectiveness of various methods of re-warming was evaluated. Conclusions from these recently completed studies will be drawn when the experimental data have been analyzed.

The Institute also carried out experiments to develop a better index for predicting cold stress than the previously cited Siples Wind Chill Index (WCI). A Cold Stress Index Meter was developed.

Ongoing research projects at RMC/MERG in 1981-82 included: studies of the freeze-thaw resistance of concrete, the construction of pavement over highly compressible terrain, soil stabilization for roads and runways in the North, ditching and cratering in frozen soils and the geothermal characteristics of continuous and non-continuous permafrost in the Canadian Arctic.

***Plans for 1982-83***

In April 1982, small field parties will be working from the DREP camps at Nansen Sound and Jones Sound and from ice camps on the Milne and Ward Hunt Ice Shelves (located on the northwest coast of Ellesmere Island). A modest operation is also planned for Jones Sound in August and September 1982 with the support of the CCGS J.A. MACDONALD or a Canadian Forces ship. This work will be carried out in the western end of Jones Sound.

DREV will continue the service life trials of the CRV7 rocket motor, involving storage of motors at CFS Alert, until approximately 1990. Development and laboratory testing will continue on the smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations in the northern Arctic environment.

DRES will continue mobility research related to military land vehicles. This will include work on a transect near Shefferville, P.Q.

DRES plans Northern field trials in 1982 to test a new lithium battery designed at DREO and built under contract by Duracell. The battery will be used to power two pieces of Canadian Forces equipment: the radar transponder SST-181X-E and the HF manpack radio AN/PRC-515. DREO will also re-design the lead/acid battery type BB-248/U to meet new low-temperature performance goals. The battery must be able to start new, diesel-powered military vehicles under Arctic conditions. A contract demand has been sent to DSS and twenty prototype batteries are to be delivered by March 31, 1983.

DCIEM will continue to conduct research aimed at improving the protection and performance of the Canadian Forces in cold environments. Several reports dealing with physiological responses to cold and techniques for alleviating the attendant stress are expected to be published shortly. Production of the Cold Stress Index Meter developed at DCIEM is expected through a technology transfer contract with industry.

New research activities proposed at RMC/MERG include a study of waste water treatment in Arctic regions. This would involve fieldwork at Alert. Other proposed research includes extending a geothermal model to soil conditions at Alert to support the ongoing runway study.

*Research Contracts 1981-82*
Control Data Canada Ltd., Ottawa: Development and evaluation of algorithms required for acoustic detection systems in the Canadian Arctic (DREP).

University of Victoria: Electromagnetic modelling and field station studies of the coast effect in bays (DREP).

University of Victoria: Model study of the effects of surface motion in acoustic signals scattered by a rough surface (DREP).

Applied Microsystems Ltd., Victoria: Development of a submersible, low power digital tape recorder for remote data acquisition and storage (DREP).

Barrodale Computing Service, Victoria: Field data retrieval, editing and display systems (DREP).

Duracell Canada Ltd.: Military lithium-sulphur dioxide primary battery (DREO).

Carleton University: Development of a method for predicting the off-road performance of tracked vehicles (DRES).

McGill University: Development of a mobility model-terrain characteristics (DRES).

University of British Columbia: A study to determine the practical applications of laser profilometry in the evaluation of terrain for mobility modelling purposes (DRES).

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 47 151 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Sovereignty and Security | 44 764 | 94.9 |
| Quality of Life | 1 836 | 3.9 |
| Economic Growth | 551 | 1.2 |

# National Energy Board

***Responsibilities***

Under the National Energy Board Act of 1959 and subsequent amendments, the Board has two principal responsibilities: to regulate specific areas of the oil, gas and electrical utility industries in the public interest, and to advise the government on the development and use of energy resources.

The Board acts as a regulatory body by granting, with the approval of the Governor-in-Council, certificates of public convenience and necessity for constructing or operating interprovincial and international petroleum pipelines and international electric power lines. The Board also issues licences to export or import gas and to export oil or power. It issues safety orders for pipelines, regulates the rates, tolls, and tariffs charged by the oil and gas pipeline companies under the Board's jurisdiction and approves pipeline utility crossings.

In its advisory role, the Board may, on its own initiatve, hold inquiries into particular energy-related matters and prepare reports for the government, Parliament and the general public. The Board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

In addition, it administers certain provisions of The Petroleum Administration Act. This Act, passed on June 19, 1975, empowers the federal government to impose a charge on the export of crude oil and certain petroleum products, to compensate petroleum importers for certain petroleum costs and to regulate the price of Canadian crude oil and natural gas in interprovincial and export trade.

**Responsibilities under the Northern Pipeline Act**

The Northern Pipeline Act, passed on April 12, 1978, provides authority for the construction of a natural gas pipeline in Canada along the Alaska Highway. The Act also authorized the creation of the Northern Pipeline Agency to oversee the construction of the pipeline. The Board's responsibilities under the Act relate mainly to financing and tariffs, approving pipe specifications, granting leave to open orders and regulating the operation of the line.

***Review of 1981 Operations***

**Gas Pipeline Hearings**

*Foothills (Yukon) Pipeline*

In July 1980, the federal government approved construction of the southern portions (the "prebuild") of the Canadian sections of the Alaska Highway Natural Gas Pipeline.

In August 1981, the Board released its findings on a public hearing held in March and April concerning, among other matters, the tolls to be charged by Foothills Pipe Lines (Yukon) Ltd. in the operation of the western leg of the "prebuild". In addition, the hearing dealt with certain matters arising from the Board's 1979-1980 tariff hearings. These items had to be resolved before operation of the western leg could begin.

The hearing also focused on the Final Design Cost Estimates for the western and the eastern legs. The review was necessary before the Board would accept these estimates, which the Company would use to measure its cost control performance under the Incentive Rate of Return Scheme approved by the Board in its decision on the tariff hearing.

The total cost estimates as filed for the western and eastern legs totalled $167 379 000 and $653 942 000 respectively. These figures covered construction of 213 kilometres of pipeline and a meter station in the western leg and 635.4 kilometres of pipeline, three compressor stations, and a meter station in the eastern leg. The Board disallowed about 2 per cent of the estimates for the western leg and about 5 per cent for the eastern leg.

For rate base purposes, the Board authorized Foothills (Yukon) to include preliminary and construction expenditures incurred during the year ending December 31, 1980 totalling just over $158 million, subject to certain adjustments.

*Arctic Pilot Project*

In June 1981, the Board announced that it intended to hold a public hearing no earlier than October 1st concerning an application by Arctic Pilot Project Inc. and an associated application by TransCanada PipeLines Limited. At the end of September, the Board announced that the hearing would start on November 24, 1981.

The Arctic Pilot Project application involves building a natural gas pipeline and liquefaction plant on Melville Island in the Arctic, the transportation of the liquefied natural gas (LNG) in ice-breaking tankers to an eastern Canadian port where the LNG would be regasified and, finally, the export of natural gas from Alberta to the United States.

The application by TransCanada Pipelines is for a certificate to authorize the construction and operation of the associated LNG receiving terminal and regasification plant. It would be located at either Gros Cacouna, Quebec, or Melford Point, Strait of Canso, Nova Scotia.

The Minister of Energy, Mines and Resources also asked the Board to thoroughly examine the entire project in addition to carrying out its regulatory responsibilities of licensing the gas for export and certificating the regasification. plant. The Board was then to report on all matters relating to the necesssity of the proposed terminal and regasification plant.

In September, Arctic Pilot Project Inc. amended its application by reducing the quantity of Alberta gas to be exported, to an amount equal to that supplied from the Arctic. Subsequently, the Board decided to hear the export component of the application, not as part of a future omnibus gas export hearing as had been announced, but together with all other aspects of the Arctic Pilot Project.

After the announcement of this decision, Inuit Tapirisat of Canada ("ITC") and the Baffin Region Inuit Association ("BRIA") brough a preliminary motion requesting, among other things, that TransCanada be required to elect between the Gros Cacouna, Quebec and Melford Point, N.S. terminal sites. ITCBRIA requested that this motion be heard prior to the commencement of the public hearing of the Arctic Pilot Project. The Board, not seeing any urgency in the motion, refused this request. ITC/BRIA then brought an application under section 18 of the Federal Court Act for an order compelling the Board to hear its motion. Subsequently, the Board received other motions, which made it convenient to hold a preliminary sitting to begin November 2, 1981. ITC/BRIA were, therefore, invited to present their motion of September 25, 1981 at this time. As a result, ITC/BRIA did not proceed with their section 18 application.

Shortly after this, ITC/BRIA brought another application under section 18 of the Federal Court Act to quash the order of the Board including the export application with the other aspects of the Arctic Pilot Project and providing that the export application should be heard in Phase I. This application was argued October 29, 1981 and on November 2, 1981, the Federal Court of Canada, Trial Division dismissed the application.

In addition, ITC/BRIA applied to the Federal Court of Appeal on December 2, 1981 under Section 18(1) of the Act for leave to appeal the Board's decision of November 5, 1981 which refused ITC/BRIA's motion to require TransCanada to elect between the Gros Cacouna, Quebec and Melford Pont, N.S. terminal sites. The application for leave to appeal is expected to be heard early in 1982.

## Oil Pipeline Hearings

*Interprovincial Pipe Line (NW) Ltd.*

In April 1981, the Board rendered its decision recommending to the Governor in Council the issuance of a certificate of public convenience and necessity to Interprovincial Pipe Line (NW) Ltd. for the construction and operation of a buried oil pipeline from Norman Wells, Northwest Territories, to Zama, Alberta. The decision was reached following five weeks of public hearings in Edmonton, Yellowknife, and Ottawa.

The pipeline, 323.9 millimetres in diameter and some 866 km in length, is to be built at an estimated capital cost of $360 million. It will be used to transport 5 000 cubic metres per day of crude oil and natural gas liquids produced by Esso Resources Canada Limited to existing Canadian markets. Installation of additional pumping capacity could raise the system's capability to approximately 7 150 cubic metres per day. To reach these volumes of production, Esso Resourcas proposed to expand the existing Norman Wells field and to use secondary recovery techniques.

The Board also issued a tariff order approving the form and content of the tariff for the transportation of petroleum from Norman Wells to Zama providing for a "full cost of service" tariff, including a 16 per cent return on equity.

Originally, IPL (NW) planned to have construction of the pipeline completed by the end of 1983 and proposed to start operations in early 1984. However, this schedule changed; on July 30, 1981, the government announced in approving the project that it required a two-year delay on the start of field construction, a two-and-a-half-year delay on the start of field construction anda two-and-a-half-year delay on the start of pipeline construction. This meant that work on the oilfield expansion would not begin until the summer of 1983 and that pipelaying would not begin until November 1983. The project would thus not become operational until mid-1985.

After receiving the approval of the Governor in Council, the Board issued Certificate No. OC-35 to IPL (NW) in November 1981. The certificate stipulates conditions that the Company must satisfy before construction may begin, including the necessity of submitting findings on field tests, financing arrangements, an environmental assessment, measures for minimizing the project's effects on wildlife and fish resources, and inspection and monitoring programs before, during, and after construction of the pipeline system.

*Trans Mountain Pipe Line Company*

In April 1979, Trans Mountain Pipe Line Company Ltd. applied for a certificate of public convenience and necessity authorizing the construction and operation of a pipeline to transport Alaskan crude oil from the west coast to Edmonton, Alberta for trans-shipment to the northern part of the United States.

In June 1981, the Board announced that it was prepared to issue a certificate to Trans Mountain Pipe subject to Governor-in-Council approval, for the construction and operation of a 762 millimetre diameter crude oil pipeline approximately 927 kilometres in length extending from the International Boundary near Sumas, Washington to Edmonton.

In a previous report released in January 1980 on the Trans Mountain application, the Board concluded that there was insufficient evidence before it at that time to assess the marine and coastal environmental risks to Canada posed by the operation of a United States crude oil port and associated tanker traffic. Because of the possibility of damage to the marine environment, the Board was not prepared to grant a certificate for the Trans Mountain pipeline. Accordingly, Trans Mountain was given the opportunity to prepare evidence for a re-hearing limited to marine environmental impacts.

In rendering its decision based on new evidence presented at the re-hearing, the Board stressed that its mandate was to determine whether there was a reasonable likelihood that construction and operation of the pipeline would expose the marine and coastal environment of Canada's west coast to an unacceptable increase in the risk of oil spill damage. On the basis of the evidence, the Board concluded that the risk of oil spill damage from tankers in the inner waters of Puget Sound would be decreased if, as Trans Mountain proposed, a pipeline were built to supply the several U.S. Puget Sound refineries from a single port outside the Sound.

Certain conditions were set out in the Reasons for Decision. One required the Company, before starting construction of the pipeline in Canada, to file with the Board, copies of the appropriate United States regulatory authorizations for construction of the Low Point oil port and related pipeline facilities in the State of Washington. The Company also had to show to the satisfaction of the Board that the port and facilities would be used to supply all or part of the crude oil for the American Puget Sound refineries at Ferndale, Anacortes and Cherry Point.

In July 1981, Trans Mountain advised the Board that it had requested an indefinite postponement of a hearing before the Washington State Energy Site Evaluation Council into a west coast oil port stating: "The recent and continuing dramatic decrease in petroleum product demand in the United States has caused significant changes in supply and distribution patterns and in crude oil prices. Trans Mountain is now of the opinion that a major new oil pipeline cannot be financed under today's business conditions and consequently requested the postponement."

Under the circumstances, Trans Mountain requested that the Board not forward to the Governor-in-Council its decision on the certificate application until Trans Mountain was able to clarify the status of its application before authorities in the State of Washington. That is where the matter now stands.

**Litigation**

A Decision of the Board released on April 22, 1981, granting a certificate of public convenience and necessity to Interprovincial Pipe Line (NW) Limited, permitted the Company to construct and operate an oil pipeline extending from Norman Wells, Northwest Territories to Zama, Alberta. The Board had conducted a public hearing, as it is required to do, on the application of Interprovincial. Four of the intervenors who had participated in this public hearing sought leave in the Federal Court to appeal the Board's decision to issue the Certificate. They argued that there was a notable lack of evidence, particularly with respect to environmental and regional socio-economic matters. It was further argued, first, that the Board had recognized and commented on this lack of environmental evidence in its Reasons for Judgement and, second, that this kind of evidence was necessary before the Board could issue the Certificate of Public Convenience and Necessity. Finally the intervenors argued that because of the fundamental, important and crucial nature of such evidence, they should have had the right to test it through cross-examination at the public hearings, reserving the right to reply to this evidence later, if they considered it necessary, by leading rebuttal evidence.

The application for leave to appeal was argued before the Federal Court of Appeal on June 17, 1981. The Court gave its judgement on June 30, 1981; it dismissed the application for leave to appeal. In doing so, the Court held that all of the matters that the Board had be dealt with by way of conditions in the certificate could properly have been dealt with in that way; that they were purely administrative matters not required to be dealt with as a part of the quasi-judicial public hearings; and that, in so dealing with these administrative matters, any duty by the Board to act fairly towards the applicants was undoubtedly discharged by the provisions providing for input by the intervenors with respect to compliance with those conditions. The Court held that the applicants had been given significant and substantial participation in the environmental and socio-economic areas of concern to them and as a result they had been dealt with fairly. The Court thus concluded that there was no reasonably arguable question of law or jurisdiction which the Court would be entitled to consider.

# National Film Board

***Responsibilities***
The NFB's northern activities involve producing motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its people and their activities, its industries, resources and instituions. The Board distributes these materials about the North in other parts of Canada and abroad. Conversely, it distributes other materials about other parts of Canada within the North. The NFB advises federal government agencies about the audio-visual media and plans, produces and distributes departmental films for information, training and cultural purposes.

***Review 1981-82***
The Board maintained its relationship with the Nunatsiakmiut Society of Frobisher Bay and provided administrative, financial, technical and training services. During the year, the Department of Indian and Northern Affairs ended its involvement in the joint undertaking. The Board continued to provide services such as transferring Super 8 material to videotape. The Society later edited the material in Frobisher Bay for telecast by the CBC Northern Service. The Society also began filming in 16mm with assistance from the Board.

During 1981-82, the Board continued to help Taqramiut Nipingat of Sugluk, Quebec to add Inuktitut language sound tracks to NFB films for telecast by satellite.

The Board continued to provide technical assistance to Cree communities in the James Bay area to establish a communications network. The first television cable and receiver system was licensed to the Mistassini Lake Communications Association during the year. During 1982-83, a series of film productions is planned, including television clips for satellite transmission to Cree Communities.

The Board worked with the Inuit Broadcasting Corporation, primarily in transferring Super 8 film to videotape.

The past year has seen a sharp increase in the amount of work that our Northwest Regional Studio carried out. The Studio participated in a film seminar on production and a joint CBC/Government of the Northwest Territories project held in Yellowknife. Discussions have also been held with CBC Yellowknife about a possible film co-production entitled *Folk on the Rock*. Two films are in production in the studio — *Northern Explorations* and *The Last Mooseskin Boat*. The latter is a co-production with the Native Communications Society of the Western N.W.T.

This year, the Ontario Regional Studio completed *Magic in the Sky*, a co-production with Investigative Productions. This film had support from the various sources, i.e., the Inuit Tapirisat of Canada, Secretary of State, the Department of Indian and Northern Affairs and the Department of Communications. The film is a one-hour documentary on Inukshuk, the first pilot Inuit television network. It looks at the impact of television on the Inuit and, by extension, the effect of the medium on similar societies and cultures.

The Multi-media Studio completed two slide sets in the series Canada's Visual History/Histoire du Canada en images entitled *Canadian Arctic Prehistory/La prehistoire de l'Artique Canadien* and *Copper Eskimo/Les esquimaux de cuivre*. The Studio also completed a sound filmstrip in Inuktitut, *Peter Pitseolak — The Man Who Made Pictures*, and two programs for the Canadian School Telecasts, which were shown on the CBC. The first of these telecasts, *Salt Water Coasts — Arctic I* describes the exploits of the men who explored Canada's Arctic. The second, *Arctic II*, highlights the continuing search for a commercial sea route through the Northwest Passage.

During 1981-82, NFB French Production completed shooting the film *COOP* and began its editing stage (Producer: Maurice Bulbulian). *COOP* is a documentary feature film produced with the collaboration of representatives of the Inuit communities of Povungnituk, Ivujivik and Sugluk. This film will be completed in 1982 and will be available in the original Inuit version and in English and French.

As well, a one-hour film entitled *Kluane National Park* was completed with the participation of Parks Canada.

***Northern B.C. and Yukon***
Service to these areas is provided by two film libraries: the NFB library in Prince George and the library operated by the Yukon Territorial Government in Whitehorse. The Territorial library purchases prints from the NFB at cost and has a substantial inventory of NFB titles. It also receives back-up service from the NFB regional library in Vancouver. This back-up service is provided both directly to the main library in Whitehorse and to branch libraries in smaller communities. The service has given these communities access to the full range of NFB materials, and it has accounted for some 300 bookings in 1981-82. The NFB library in Prince George processed 12 000 bookings to users in Northern British Columbia.

In June 1981, several public screenings of NFB films were organized for the local population in conjunction with the NFB Board of Governors' Meeting in Whitehorse.

**Northwest Territories**

Distribution activities in the Northwest Territories are co-ordinated from NFB offices in Edmonton and Ottawa.

The Edmonton NFB office, which services the Western Arctic, provided a supply of catalogues to the Dene National Office in Yellowknife this year. These catalogues were then distributed to every Dene community in the Western N.W.T.

The Board signed a major contract with the Department of Education of the Territorial government that has resulted in the opening up of the Department's film libraries to the general public throughout the N.W.T. As part of this contract, the NFB provides films to the Department's libraries at 50 per cent of the catalogue price. This agreement has enabled these libraries to acquire much more NFB film material and has resulted in better access to films for N.W.T. communities. Direct bookings to the Western Arctic from the Edmonton NFB office increased to approximately 1500 during 1981-82.

This year also saw the world premier of the NFB co-production *Magic in the Sky* at the International Native Communications Conference in Edmonton in February 1982. The Dene Nation in Yellowknife has decided to show this film at its annual general assembly in Fort Simpson in the Spring of 1982. In the upcoming fiscal year, the NFB will be organizing a three-day showcase of specially selected films at Inuvik for all Department of Education Audio-visual Supervisors. This event will focus on films related to N.W.T. curricula, archival films on the North and certain general interest titles.

The NFB office in Ottawa serves the Eastern Arctic (Baffin — Ellesmere region). This "outpost" service has 1000 prints, and this number will be increased in 1982-83 by transferring prints from other libraries. During the past twelve months, a total of about 500 bookings were made to the Eastern Arctic — a decrease from the previous year. Most of these films were used in adult education, nursing stations and schools. The CBC Northern Service previewed a number of films from our Ottawa office during the past year and purchased 13 for telecast to communities in the North.

In 1982-83, several new films sponsored by Indian and Northern Affairs will be released including *Canada's Eskimo Dog*, *Canada's Reindeer* and *Northern Games*. The NFB plans to promote these titles extensively throughout the North.

**Northern Quebec**

Service to Northern Quebec is provided by the NFB Regional office in Montreal. In 1981-82, the number of letters received from the North requesting films and/or information nearly doubled from the previous year. This was due partly to the distribution of the new outpost catalogues (French and English) containing new NFB and CBC titles available for Northern distribution. The Kativik School Board and the Department of Indian and Northern Affairs helped to distribute these catalogues and promote the use of films in the area.

An informal "division of labour" was agreed on with the Kativik School Board (serving the Cree communities). It will concentrate on screening educational films in video format; the NFB will emphasize films of community interest. NFB 16mm films serve a dual purpose as they are routinely shown in the community centres as well as in the schools.

The NFB received a request from Nuuk, in Greenland, to use the Board's films as an aid to teaching Inuit crafts. The request came via Makivik (formerly the Northern Inuit Association). The NFB's Montreal office contacted the Canadian Embassy in Copenhagen, which despatched the films *Eskimo Artist Kenojuak* and *Living Stone* to the International Inuit Organization Company in Nuuk.

**Sponsor Programme Office**

DIAND sponsored the production of *BIOS: The Baffin Island Oil Spill Project*, a video-tape in Inuktitut, English and French, that will inform Northern communities about the BIOS Project. DIAND and the Museum of Man participated financially in the production of the film *Summer at the Tree River Camp* by Graydon McCrea. The film is in English and Loucheux and shows the summer camp life of a Loucheux family from Arctic Red River, N.W.T.

DIAND and the Museum of Man participated financially in *The Last Mooseskin Boat*, a co-production of NFB's Northwest Studio and the Native Communications Society of the N.W.T. The film documents the construction of a mooseskin boat by Mountain Dene in the Mackenzie mountains of the N.W.T.

Through the NFB's network of libraries, DIAND is sponsoring the distribution of three films: *Northern Games* a film about traditional Inuit games, and two others — *Canada's Reindeer* and *Qimmiq, Canada's Eskimo Dog*.

***Plans for 1982-83***

The NFB plans several productions for 1982-83. The Northwest Regional Studio plans a film on the Peace-Athabasca Project in northern Alberta. This film is concerned with how the mega-projects in the tar sands area will affect native peoples. The Atlantic Regional Studio is considering the production of a half-hour documentary on the 18th century Moravian Missionaries from Germany and their impact on Inuit culture.

The Multi-media Studio has plans to complete 3 filmstrips in the series Firearms Safety — *Firearms Safety*, *Indian Hunting Traditions*, and *Inuit Hunting Traditions*.

Also in the planning stage is a series entitled *The World of the North*, consisting of six one-hour films focusing on the world of the Arctic as seen through the eyes of Canadian author, Farley Mowat.

A most ambitious project is now in production — a series of documentary films on the scientific knowledge of the inhabitants before the arrival of the white man on Canadian soil. This project, still in the early stages, could be completed in the fiscal year 1982-83.

# National Museums of Canada

**Native Woman and Child in Fort McPherson, Northwest Territories, Summer, 1981.**

## National Programmes

### *Canadian Conservation Institute*

***Responsibilities***
The Canadian Conservation Institute (CCI), of the National Museums of Canada helps publicly-owned museums, galleries, and archives to protect their collections against deterioration. CCI combines scientific research with applied conservation techniques in its laboratories in Ottawa and operates mobile laboratories across Canada. As well, the Institute provides advice on all matters from the care of artifacts to maintaining proper environmental conditions within institutions. It offers free lectures, workshops, and seminars.

***Review 1981-82***
Through the mobile conservation laboratory service, the Institute provided on-site conservation assistance to a number of museums in the North. Artifacts were treated and museum personnel were shown how to care for and store their collections properly.

Staff from the Institute visited the Yukon Territorial Archives, where they spent several weeks treating objects in the collection. Lectures and demonstrations were given on how to care for archival materials. At the Institute's laboratories in Ottawa, scientific examinations of artifacts recovered from excavations in the Yukon and the Northwest Territories were conducted, and conservation treatments were performed on them.

***Plans for 1982-83***
Work on the scientific examination and conservation of artifacts composed of organic materials recovered from excavations at Dealy Island will continue at the headquarters laboratory. CCI will continue to advise museum personnel in both the Yukon and the Northwest Territories on the proper care, handling, display, and storage of their collections.

The Institute will provide expertise in conservation during archaeological field work that the Government of the Northwest Territories is carrying out.

### *Museum Assistance Programs*

***Responsibilities***
The Museum Assistance Programs provide financial and technical assistance to Canadian museums and related institutions. The programs' objectives are, first, to help these organizations to preserve the objects and collections that form Canada's natural, cultural and technological heritage and, second, to increase public access to these materials. These programs provide different kinds of assistance. Specifically, help is available to register collections; train museum personnel; prepare, produce and circulate exhibitions; employ conservators; purchase equipment and upgrade facilities. Assistance is also available for planning and special projects and for public programming activities of Associate Museums and National Exhibition Centres.

*Review of 1981-82*
A grant of $9 000 enabled the Inuit Cultural Institute to examine the feasibility of establishing a museum of Inuit history at Eskimo Point. Planning for the project is continuing.

A grant of $13 500 was allocated to the Fédération des coopératives du Nouveau-Québec toward funding the exhibition "Things Made by the Inuit".

*Plans for 1982-83*
A grant of $20 000 has been committed for the 1982-83 public programming activities of the Northern Life Museum and Exhibition Centre in Fort Smith.

The exhibition *Peter Pitseolak* produced by the McCord Museum, Montreal, will tour 33 Inuit communities in New Québec, Baffin Island, the Keewatin District and the Northwest Territories. The Museum Assistance Programmes have contributed $49 700 towards this tour.

*Mobile Exhibits Program*

*Responsibilities*
The Mobile Exhibits Program operates three Museumobiles and exhibits artifacts and related materials mainly in smaller communities across Canada that do not have ready access to major museums. The Program began with a single trailer in 1973. It now operates three caravans of three trailers each. Each Museumobile caravan, consisting of three 13-metre trailers, depicts the geographic, archaeological, social and natural history of a region of Canada.

The Museumobiles are funded, designed, constructed and operated by the National Museums of Canada. Associate Museums in each region participate in the development of the storylines and the provision of artifacts. Museumobile caravans telling the stories of Canada North, Canada West and Atlantic Canada are currently visiting community centres, schools, homes for the elderly, correctional institutions, shopping plazas and other locations in Central Canada, Western Canada and Quebec.

*Review 1981-82*
The Minister of Justice and Public Services, the Honourable George Braden, formally invited the Atlantic Canada Museumobile to tour the Northwest Territories. The tour took place from August to October 1981, and was divided into two phases: in phase one, the caravan stopped at 11 sites in the Dempster Highway and the Yellowknife/Great Slave Lake Region. The second phase was an extension program called *Outreach*, in which staff visited a number of northern communities that are inaccessible by road. They travelled mainly in Twin Otter airplanes and were billeted through the auspices of the Ministry of Education.

The Outreach programme visited 11 settlements, presenting informative and entertaining lectures, slide shows, artifact displays and discussions.

By the time the tour had been completed, the Museumobile had logged 10 000 km in 12 weeks and had been visited by 24 563 visitors — 75 per cent of the population to whom the program was made accessible.

**National Museum of Man**

*Canadian Ethnology Service*

*Responsibilities*
The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This work includes carrying out research, building and analyzing collections and distributing information on the ethnographic, linguistic, and material culture of the Indian, Inuit and Métis peoples of the Yukon and Northwest Territories.

*Review 1981-82*
Staff research focused on Athapaskan land use, material culture, Athapaskan-Inuit interrelationships, Inuit transportation and changing patterns of subsistence.

Research projects contracted through the Urgent Ethnology program included: an examination of Inuit space-time in Igloolik, N.W.T. and linguistic research on the Athapaskan dialect of Dogrib as spoken in Lac La Martre, N.W.T.

*Plans for 1982-83*
Staff research will focus both on Athapaskan land use, material culture and changes and music.

Field contract research will focus on Athapaskan beadwork, Dogrib linguistics, Sekani linguistics, Beaver Indian traditions and their responses to industrial development. It will also concentrate on investigating Athapaskan post-contact clothing traditions and sewing techniques, and kinship as a demographic and ecological integrator among east Baffin Island Inuit. Finally, research will involve collecting Inuit oral history relating to their own whaling activity and that of others in the Hudson Straits and Hudson Bay.

*Archaeological Survey of Canada*

*Responsibilities*
The Survey undertakes research and rescue archaeology pertaining to the prehistoric occupation of Canada.

*Review 1981-82*
The Rescue Archaeology Program participated in seven projects in the Yukon Territory, and the Northwest Territories.

A joint archaeological inventory project was carried out by DIAND, the Yukon Government and the National Museum of Man (NMM). S. Greer from the University of Toronto directed the project, which was carried out in the MacMillan Pass area as part of the Yukon Resource Inventory Program's second season. A second, complementary project was carried out under the joint auspices of DIAND and the NMM. It was directed by R. Gotthardt (University of Toronto) and consisted of a study to assess the archaeological impact of the proposed North Canol Road reconstruction project.

Woman's inner parka - from Rankin Inlet, Northwest Territories. Eskimo Caribou, Made in 1975 except breastplate, c. 1937. Collection of the Canadian Ethnology Service, National Museum of Man.

In the Northwest Territories, S. Greer briefly examined a borrow pit operation at Fort Franklin. D. Morrison (formerly of the University of Toronto, and now with the ASCNMM) carried out impact assessment studies in the vicinity of the Repulse Bay airport and at a mining operation on Contwoyto Lake. J.W. Helmer (University of Calgary), and U. Linnemae (University of Saskatchewan) respectively examined airport construction at Gjoa Haven, and borrow pit operations at Rankin Inlet. Finally, for a third season, E. Bielawski (Prince of Wales Northern Heritage Centre) directed the Northern Heritage Project field school at Stanwell-Fletcher Lake, Somerset Island. All of these projects were carried out at the request of the N.W.T. and were supported by N.W.T., Transport Canada, the NMM, and, in one instance, private industry.

### *Research*

Further excavation work was carried out at the Late Pleistocene Bluefish Caves site in the northern Yukon interior. A series of preliminary reconnaissance surveys also resulted in the discovery of more caves and rock shelters. These discoveries also led to the investigation of a number of karst features (dolines) for the purpose of regional, paleoenvironmental reconstruction.

This work was carried out as a major component of another project — NEBRIA (Northeastern Beringian Refugium: interdisciplinary approaches). This project was organized and field directed by the ASC with the support of various agencies such as the GSC, the University of Toronto, the Polar Continental Shelf Project, and the NMM. Close to 40 reseachers and scientific visitors from both government and private institutions also participated in the project.

Continued work on Pleistocene exposures in northern Yukon Territory represented an extension of the previous field work done as part of the Yukon Refugium Project. New data concerning archaeology, vertebrate paleontology, tephrochronology, pedology, and stratigraphy were collected at five exposures in Old Crow Basin, at four sections in Bluefish Basin, and at one Bell Basin location. The first of four major papers on this work appeared in the December 1981 issue of *Arctic*.

A month long survey of the Mosquito, Sid and Mary Lakes region of the S.E. District of Mackenzie, N.W.T. was undertaken in July 1981. In all, 64 archaeological sites were found, including a stratified site bearing 3 intact levels and adjacent blowout deposits of Shield Archaic, Pre-Dorset and Taltheilei artifacts. Three radiocarbon samples were collected, including one from a Pre-Dorset hearth. The 64 sites link the previously surveyed Thelon and Dubawnt valleys, forming a clearer picture of the migratory nature of man and caribou in the barrenlands.

### *Plans for 1982-83*

Mr. David Morrison will carry out an archaeological survey in the central District of Mackenzie of the N.W.T. He will search for the remains of prehistoric Indian culture.

ASC will continue its participation in working to rescue archaeological sites threatened by natural processes and human activities.

## National Museum of Natural Sciences

### *Botany Division*

***Responsibilities***

Although the Botany Division has no long-term program of research in the North, it contributes to the knowledge of boreal and Arctic plant species in Canada through botanical surveys, field research programs and the maintenance of the National Herbarium. The Herbarium is a collection of more than 750 000 plant specimens. Research is conducted in plant systematics, taxonony and phytogeography. The Division co-operates with scientists of other government agencies and countries interested in the North.

In 1980, a project was proposed to produce a small manual of "Arctic Wildflowers" for use of persons visiting the Arctic regions during the summer season. Although the late Dr. A.E. Porsild prepared an illustrated flora of the Canadian Arctic ARchipelago several years ago, the flora is of a technical nature and the illustrations are black and white line drawings. The manual is based upon a concept that involves producing a series of coloured photographs of the most "showy" Arctic flowering plants. Non-technical information would accompany the photographs of the various plants. The inconspicuous species are to be omitted. The original plan was to obtain as many photographs as possible in two seasons. The first season's photographic work has been completed. For each plant photographed, a "voucher" specimen has been collected to ensure that the plant has been correctly identified. These specimens are to be deposited in the National Herbarium for safe keeping.

The originator of this project, Dr. John M. Gillett, is Curator of the National Herbarium of Canada, and the photographer is Mr. Harry Foster, National Museums of Canada.

***Review of 1981-82***

As indicated above, the objective was to obtain colour photographs for the manual of wildflowers with accompanying herbarium specimen vouchers. Work was carried out during the period July 17-31, 1981 at Tuktoyaktuk and at Sachs Habour, N.W.T. The party worked at Tuktoyaktuk from July 17-23rd and at Sachs Harbour from July 23-29, 1981.

In addition to the voucher specimens collected when photographs were taken, 137 plant specimens for the plant exchange program were collected from Tuktoyaktuk and 157 from Sachs Harbour. Several samples of each plant were collected.

***Plans for 1982-83***

Most of the specimens collected during the summer of 1981 have been identified, and the photographs have been developed and sorted. Some specimens remain to be identified and co-ordination of photographs and specimens is yet to be done.

The 1981 sortie was designed to obtain most of the western Arctic species. During the summer of 1982 a further visit to Frobisher Bay, N.W.T. to gather plants from the eastern Arctic is planned.

Because of variation in flowering time and climate, it may not be possible to obtain enough photographs in two seasons, given that only two weeks have been allowed in each locality. However, if samples of enough species for publication purposes, can be collected within the time available, then the manual will be published. If more photographs are required, then another manual could be planned for future years.

### *Vertebrate Zoology Division*

***Responsibilities***

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through carrying out comprehensive faunal surveys and field research programs. The Division maintains important collections, and does research in systematics, taxonomy, and zoogeography. It also co-operates with scientists of other government agencies and countries interested in the North.

*Vertebrate Ethology Section*

The Vertebrate Ethology Section carries out detailed, long-term studies of the behaviour of vertebrates, particularly birds and mammals. Since 1968, this Section has carried out studies of the relationships between species of Arctic animals and the behavioural adaptations that enable them to survive in High Arctic conditions. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.

***Review of 1981-82***

In Vertebrate Ethology, scientists used the High Arctic Research Station for brief monitoring visits and as a base for projets conducted elsewhere.

Field research was carried out in April and August on Bathurst and Ellesmere Islands as part of the last phase of the long-term study of muskox behaviour in the Arctic Islands. In an attempt to fully document muskox behaviour during the calving and rutting seasons, more than 24 hours of 16mm film and 5 reels of sound tape were acquired. In both research areas (Polar Bear Pass and Sverdrup Pass) most females were accompanied by calves, and the survival of last year's calves was good. Courtship activities were instensive in both areas in August. Film and sound recordings obtained in 1981 will be used, along with material from previous years, in a documentary film on muskox behaviour.

The travelling exhibit based on the muskox research project, *Omingmak, The Muskox* was on display in Fort Smith and Yellowknife, N.W.T. from October 1981 to March 1982. The annual investigations of nesting Ross's Gulls and sea birds associated with the polynias in Penny Strait were continued. Only one pair of Ross's Gulls was present. Their nest had recently been predated, presumably by polar bears, but the birds remained strongly territorial and "incubated" two egg-sized stones in the nest. Common Eiders which also nest on islets in Penny Strait were much reduced in numbers, and nest predation by bears was much in evidence.

Exploratory studies of the Ivory Gull colonies on the Ellesmere ice cap were begun in collaboration with Dr. Vernon Thomas of the University of Guelph. This program combines animal behavioural adaptations, physiology, and histology.

***Plans 1982-83***

With the end of active field research on muskox behaviour, the emphasis will shift to publishing results and the co-production of the documentary films.

The annual census of the rare Ross's Gull is planned for islets in Penny Strait, Queen's Channel, and McDougal Sound. At the same time, observations on utilization and breeding success of sea birds will be carried out.

Extensive banding and colour marking of Ivory Gulls is scheduled to take place at Grise Fiord prior to examining the colonies located on nunataks in the Ellesmere ice cap. This program should give some indication of how an abundant food supply at this native village might influence either the success of the nesting gulls, or the location of Ivory Gull colonies.

Operations at the High Arctic Research Station at Polar Bear Pass, Bathurst Island will be limited to maintaining the laboratory building and other structures.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 276 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Social and Cultural Development | 276 | 100.0 |

# National Research Council

This vertical-axis wind turbine, now being tested near Churchill, Manitoba, could offer remote northern communities a cost competitive source of electricity. NRC, which is responsible for co-ordinating Canadian R&D on renewable sources of energy, is testing such wind turbines at various locations in Canada, and this testing will continue in 1982-83.

## Division of Electrical Engineering

***Review of 1981-82***
The Division began to measure the thickness of sea-ice from helicopters. It continued to review the literature on this topic and monitored other Canadian ice-related research. Trials with a related video-pulse radar operating in the 10MHz region showed that the unit lacked sufficient transmitter power and receiver sensitivity. Since these problems could not be resolved in an economically viable way, work on this radar was stopped. A comprehensive report on the unit was published in February 1982.

***Plans for 1982-83***
The review of literature and monitoring of Canadian developments will continue.

## Arctic Vessel and Marine Research Institute

***Review 1981-1982***
The facilities of the Arctic vessel and Marine Research Institute of the National Research Council have been increasingly in demand by private companies and government departments involved in the development of Canadian Arctic resources. Designing oil drilling and production structures for use in the North poses certain challenges. The structures must be capable of being safely moved from the South, where they are built, to the North. Structures must then be able to withstand the harsh Arctic climate after being placed in service. During the past year, the Institute has been working on models of two such structures, each unique in design. Tests have been carried out to determine the tow-forces needed to move the structures to the northern latitudes and under what sea conditions they can be safely towed.

The Institute has also been much involved in the design of vessels capable of operating safely and efficiently in ice-covered waters. Studies were conducted on an 83 metre long vessel designed to service navigation aids under these conditions. Experiments were carried out to compare the manoeuverability of this vessel when operated with single and twin-rudder configurations. Tests were also carried out to determine the effect of installing a passive stabilizer tank. The vessel's efficiency was determined under a range of sea conditions. Trials were carried out with the ship in open water and when overcoming resistance from ice.

The Institute has been investigating the effects of ice on the propellers of ships. Experiments were carried out on a model of a triple-screw Arctic Class 7 design. It was modified with features to shield the propellers from ice. The wake then was analyzed to enable special propellers to be designed.

In 1981 the Institute completed the analysis of data obtained during the probe of Lake Melville by the CCGS Franklin in the 1979 to 1980 winter. The probe was made to test the ship's performance in heavy ice. In 1980-81, the Arctic Class 2 Bulk Carrier M.V. Arctic travelled into Lake Melville to establish her performance under similar conditions. The object of these trials was to establish the limits of ship performance in the area without icebreaker support. In this project, carried out jointly with industry and other government departments, NRC was responsible for measuring ice strength and for carrying out ice crystallographic studies.

The Institute played a leading role in organizing a successful Society of Naval Architects and Marine Engineers' Spring Meeting/STAR Symposium "ICE TECH 81" held in Ottawa in June 1981. Twenty-seven papers were presented, many of whose authors are internationally renowned for their work in arctic marine transportation. Approximately 400 delegates attended from all parts of Canada, the United States and abroad.

Copies of the Symposium Proceedings are available from the Society and supplementary proceedings containing the discussions and authors' replies will be available shortly.

Construction has progressed on new laboratories for the Institute in St. John's, Newfoundland. New personnel have been hired and the number of projects has been expanded.

#### *Plans for 1982-1983*

More work in arctic vessel design development, both in-house and by contract is planned for the coming year.

The Institute is starting to investigate the design of an icebreaking LNG carrier. Various bow-stern combinations will initially be tested in clear water where their propulsive performance under simulated icebreaking conditions will be established.

### Division of Chemistry

#### *Review 1981-82*

Natural gas hydrates are solid combinations of natural gas and water, which occur in considerable quantities in and below the permafrost in northern Canada. Laboratory studies of the physical properties of gas hydrates have now established that their thermal conductivity is only about one-quarter of that of ice. This knowledge is useful in detecting and estimating the quantity of hydrates.

#### *Plans for 1982-83*

The Division will continue its experimental studies of gas hydrates. This work will emphasize studies on their calorimetric properties.

### Hydraulics Laboratory

#### *Review 1981-82*

The Hydraulics Laboratory has been using its refrigerated model test basin (tank size 21 m x 7 m x 1.2 m) to document the mechanical properties of carbamide (urea) model ice. This information is required in order to be able to interpret model test results of ice-structure interactions which involve mixed-mode failure conditions.

The Laboratory carried out a series of tests on fine-grained columnar fresh-water ice to measure the compressive, flexural and shear strength of ice under identical conditions of ice type, grain size, loading rate and test temperature. The results compare the different failure modes of ice and serve as baseline values for similar tests on sea ice.

In conjunction with the Geotechnical Section of the Division of Building Research (NRC), the mechanical properties of the ice in the rubble-field around Tarsiut Island were measured.

#### *Plans for 1982-83*

The main carriage, rack and rails for the refrigerated model test basin in the Hydraulics Laboratory have now been manufactured and are being installed. When complete, model testing of the dynamic interaction between an ice sheet and various structures will be performed.

### Division of Building Research

#### *Review 1981-82*

The Division measured permafrost ground temperatures at several sites in northern Manitoba, the District of Keewatin, N.W.T. and at Alert, N.W.T. Investigations were conducted at several locations in the Y.T. and the N.W.T. in a continuing study to assess the long-term performance of insulated and uninsulated road and airfield embankments constructed on permafrost. Studies of bridge foundations on the Dempster Highway, Y.T. and of building foundations at Inuvik and Alert, N.W.T. were continued. Observations were made regularly on sewer and water lines at Dawson City, Y.T. to assess design and construction methods for utility systems buried in permafrost. The Division provided assistance to the Department of Indian and Northern Affairs in evaluating the geotechnical aspects of artificial drilling islands constructed in the Beaufort Sea.

Planning began for full-scale, long-term tests of various types of foundations in permafrost to be conducted at an Inuvik test site. Laboratory studies of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground were continued.

Laboratory research continued on the effects of frost on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone. These studies have explored the interrelationship of pressure, freezing temperature and heave rate. They have made it possible to interpret heave rates in evaluating the susceptibility of soils to frost. In conjunction with this work, the Division continued to carry out numerical and laboratory model studies of frost heave and the use of heating cables with chilled gas pipelines.

Laboratory and field studies of saline ice characteristics and behaviour continued. The Division also continued its work to determine how growth conditions have influenced the grain structure and salinity of first-year sea ice from Pond Inlet. Field measurements of the compressive strength of sea ice were carried out at Pond Inlet and Mould Bay. Studies on the behaviour of ice around a small island (Adams Island) at the intersection of Navy Board Inlet and Lancaster Sound were initiated. Studies to determine the interaction processes and mechanical properties of ice were carried out around the caisson-retained drilling island at Tarsiut in the Beaufort Sea.

#### *Plans for 1982-83*

The Division will continue to carry out field studies on foundations for various structures built on permafrost and also on the interaction between floating ice and structures. Planning for long-term experiments at the Inuvik foundation test site will be continued. The measurement of permafrost ground temperatures at different locations will be continued. Field observations and measurements of ice interactions will be continued at Adams Island.

Laboratory studies of frozen ground, frost action in soils, sea ice and permafrost foundations will continue.

Many of the Division's research projects on the thermal and moisture performance of buildings in a cold climate are directly relevant to the construction and use of housing and small buildings in the North. These projects will continue.

### National Aeronautical Establishment/Division of Energy R&D.

*Wind Energy Program*
An agreement has been negotiated between the National Research Council and the Churchill Research Centre for a joint project to test and evaluate a 50 kW Vertical Axis Wind Turbine. The system was built and commissioned in October 1981, and the power generated is fed directly into the Churchill electrical distribution system. The installation is one of several across Canada aimed at evaluating the performance and operation of the NRC-developed VAWT under the environmental and other conditions prevailing at the various sites. This unit will provide information on the applicability of current VAWT designs to Northern climates.

There is considerable interest in the North in converting wind energy to electrical energy because of increasing costs of diesel fuel. Enquiries for similar projects in the Yukon and the Northwest Territories are being considered under the framework of the federal/territorial agreement on conservation and renewable energy development, and in conjunction with the Northern Canada Power Commission.

*Aerial Magnetic Reconnaissance*
Aerial magnetic reconnaissance of the water areas of the Eastern High Arctic, ranging from Baffin Island to the North Pole, continued during April 1982. This year two areas will be surveyed: (1) the Kane Basin and Kennedy-Robeson Channel which is located between northern Greenland and Ellesmere Island, and (2) the Canadian sector of the Arctic Ocean adjacent to the north and northwest side of Ellesmere Island.

### Division of Physics

***Review 1978-1982***
A joint project with Environment Canada and the Technological Universities of Zurich and Vienna produced stereo-orthophotos at scales 1:5000 and 1:10,000 of various glaciers on Axel Heiberg Island N.W.T. from photographs taken during the summer of 1977. These glaciers were earlier mapped by the Photogrammetric Research Section from photographs taken in 1961. One of the purposes of the project is to monitor the changes in the snow and ice cover over the 1961-1977 period.

***Plans for 1982-1983***
The co-ordination of the glaciological and cartographic aspects of the project at the University of Zurich was delayed by the death of Dr. F. Muller, who had initiated the project. The acting Head of the Glaciology Department of the University of Zurich visited NRC in May 1981 and will appoint a glaciologist to carry on Dr. Muller's work.

### Canada Centre for Space Science

***Review 1981-82***
A joint NASA/NRC rocket and ground-based observational project took place during the period November 1981 to January 1982. The project called "CENTAUR", involved launching two Canadian and four American rockets from Cape Parry (N.W.T.), and installing and operating a ground observation station at Sachs Harbour (N.W.T.).

A total of six sounding rockets were launched from the Churchill Research Range, Churchill, Manitoba. Five of these launches were conducted on behalf of NASA with one flight in support of the Canadian Space Science Program.

From its facilities at Churchill, Manitoba, NRC's Canada Center for Space Science is conducting many experiments using scientific rockets and ballons, in collaboration with Canadian and foreign space scientists.

The Centre has begun to implement its CANOPUS project — a chain of ground-based stations for making geomagnetic and ionospheric observations — at approximately 18 sites in the Yukon, the Northwest Territories and northern areas in Saskatchewan, Manitoba, Ontario and Québec. The first phase of CANOPUS consists of installing instruments at 13 sites. Most of these sites have been chosen or are being acquired and will be close to communities and on federal or provincial land. The choosing of the remaining five sites will be delayed for several years depending upon data requirements and co-operative exchange agreements.

***Plans for 1982-83***
It is expected that rocket support for 1982-83 at the Churchill Research Range will consist of two Canadian rockets and three from the United States (NASA).

Specifications for the CANOPUS site preparations, including a modest structure at each, are complete. Site work is scheduled for the summer of 1983, with operations expected to begin by mid-1984.

### Herzberg Institute of Astrophysics

***Review 1981-82***
Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international, worldwide program. The data are sent regularly to the World Data Center for distribution to scientists.

***Plans for 1982-83***
The cosmic ray monitoring program will continue at the same level.

# Northern Canada Power Commission

The Northern Canada Power Commission (NCPC), a Federal Crown Corporation, operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities (primarily electrical) on a commercial basis. For this purpose, it has the authority to survey utility requirements and to construct utility plants in the Northwest Territories and the Yukon Territory.

The Commission produces most of the electrical energy in northern Canada and operates the main transmission networks in the Yukon and N.W.T. It also operates community heating, water and sewerage systems in several locations.

The authorizing Act requires the Commission's operations to be self-sustaining within each rate zone as defined in the Act. Accordingly, the rates that the Commission charges for utilities must provide enough revenue to cover interest on investment and repayment of any loans made to acquire assets. These rates must also cover operating, maintenance and administrative expenses, and enable the Commission to maintain a contingency allowance to meet unforeseen or emergency expenditures.

***Review of 1981-82***

During the 1981-82 fiscal year, the Commission provided retail electric utility service to 49 communities in the N.W.T. and to 4 in Yukon as well as to customers in Field, British Columbia. The Commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, N.W.T. and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City, Y.T. This service was provided from 7 hydro-electric plants and 52 diesel-electric plants located in the general vicinity of the communities receiving electrical service.

The Commission also supplied retail central heat, water and sewer service in Inuvik, N.W.T., as well as wholesale central heat service to the Government of the Northwest Territories at Frobisher Bay, N.W.T. In the interest of conserving energy and operating efficiently, the Commission provided waste heat from its diesel generating plants to various customers during the year at Dawson City, Y.T. Cambridge Bay, Igloolik and Rankin Inlet, N.W.T.

A task force was set up in January 1981 to study the energy situation in the North. This group consisted of representatives from EMR, DIAND, NCPC and the two Territorial Governments. In a series of meetings, the task force explored energy supply, demand and pricing in the regions. It then analyzed the data and proposed a number of options to resolve various energy-related problems. In December of 1981 the task force completed a draft policy document which is now in the hands of each of the participants.

The Commission participated in and was the subject of an inquiry conducted by a special Sub-committee of the Standing Committee of Indian Affairs and Northern Development and chaired by Mr. Keith Penner. The Sub-committee examined all aspects of the Commission's operations and held hearings in various communities throughout Yukon and the N.W.T. The Commission made a formal presentation to the Sub-committee at the hearings held on September 21, 1981 in Yellowknife and on the following day in Whitehorse. The Sub-committee had not reported to Parliament by the end of the fiscal year.

Total electrical generation during fiscal year 1981-82 was estimated to be 2 832 904 800 MJ. Of this, 1 770 026 400 MJ was produced by hydro generators and 1 062 878 400 MJ by diesel-powered generators. Power generated increased by 69 703 200 MJ (2.5%) over 1980-81 levels. Electrical sales in the Yukon Territory were approximately 1 194 120 000 MJ, an increase of 0.9% over the previous fiscal year. Electrical sales in the Northwest Territories totalled approximately 1 352 160 000 MJ, which was a decrease of 3.7% over 1980-81. The non-coincidental peak demand on all operations during the year was 144 960 kW, an increase of 2.4% over the non-coincidental peak demand of 141 503 kW in 1980-81.

***Plans for 1982-83***

Projected significant operating statistics for the 1982/83 fiscal year include the following: estimated electrical generation, 3 175 250 400 MJ, estimated electrical sales, 2 867 040 000 MJ, estimated central heat sales, 413 010 × $10^6$ KJ, estimated fuel consumption (diesel generation and central heating system), 119 992 809 litres, staff establishment, 348, Total Number of Communities Directly Serviced by the Commission, 54, Total Number of Communities Serviced Indirectly by the Commission (wholesale supply to local distributors) 6.

Major capital projects proposed for the 1982-83 fiscal year include the following:

| | |
|---|---|
| Purchase of 2 Flyable 1520 kW gas turbine units | $1 376 000 |
| Install reactor at Yellowknife sub | 75 000 |
| Purchase Fort Smith digger truck | 130 000 |
| Increase Whitehorse fuel storage with filtration equipment | 75 000 |
| Relaying protection AVR (carryover) at Taltson | 60 000 |
| Modify & upgrade plant and cooling system for plant units (carryover) at Dawson | 250 000 |
| Install new & improved electrical services at Dawson | 125 000 |
| Construct new power line for new services at Norman Wells | 100 000 |
| Distribution extensions at Tuktoyaktuk | 65 000 |
| Distribution extensions at Rankin Inlet | 75 000 |
| Install 30 kW, remove 115 kW unit at Repulse Bay | 168 000 |
| Convert Repulse Bay to 3 phase 2400/4160 volt service | 70 000 |
| Convert underground systems at Holman Island to overhead | 60 000 |
| Purchase and install 300 kW, remove 100 kW at Hall Beach | 300 000 |
| Faro distribution extensions | 100 000 |

# Northern Pipeline Agency

***Responsibilities***

The Northern Pipeline Agency was established in April 1978, with the proclamation of the Northern Pipeline Act. The Agency oversees the legislation's two objectives: first, regulating the 3 240km Canadian segment of the Alaska Highway gas pipeline to ensure maximum economic, industrial and energy benefits for Canada, while keeping adverse social and environmental impacts to a minimum and, second, facilitating the planning and construction of the project.

The pipeline will carry natural gas from Alaska along a route that closely follows the Alaska Highway through Yukon and northeastern British Columbia before entering central Alberta. At Caroline, Alberta, the line branches into two legs —one through southeastern British Columbia, and the other through southwestern Saskatchewan into the United States. A future pipeline lateral along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

***Review 1981-82***

As indicated in last year's report, Foothills Pipe Lines (Yukon) Ltd. undertook the construction of a $15 million field test program at Quill Creek, Yukon. Its purpose was to demonstrate the feasibility of constructing and operating a pipeline in areas of discontinuous permafrost. While the primary construction work was completed in March 1981, a second phase of the project was started in September to evaluate construction procedures during the period of maximum thaw depth. In this phase of the test program, four sections of pipe were installed in the embankment or above-ground mode, with varying degrees of insulation.

The construction and operation of the test facility were under the authority of a land-use permit issued by the Northern Pipeline Agency. The permit required the Company to comply with extensive technical, environmental and socio-economic conditions. The Agency has kept the site under surveillance and has inspected it regularly.

The facilities at the Quill Creek test site are instrumented and will be monitored with scientific equipment. The data collected will be used in planning the design and construction for the mainline.

In its interim report to the Minister of the Environment in September 1979, the Environmental Assessment and Review Panel (EARP) listed a series of deficiencies with respect to the Environmental Impact Statement prepared previously by Foothills. In early 1981, Foothills submitted to the EARP Panel the first addendum to the Environmental Impact Statement, which addressed routing alternatives in the Whitehorse-Ibex Pass Region.

The EARP Panel held public hearings in June 1981 on Foothills' proposed routing of the pipeline in this area north of Whitehorse. In its report to the Minister of the Environment on the subject, EARP recommended that the Whitehorse West alternative route be used rather than the Company's preferred alignment through the Ibex Valley. The Panel concluded that the pipeline could be constructed through the Ibex without undue adverse impact on the environment. However, the panel was concerned about the easier access to the area that might be provided by routing the line through the valley. The report has been forwarded to the Minister responsible for the Northern Pipeline Agency for consideration in determining the final route.

Throughout the year, the Company's geotechnical drilling programs continued to test soil conditions along the proposed route and at various compressor stations and work camps.

From April to June 1981, Foothills toured Yukon communities along the route to provide information on operations and maintenance, employment, training programs, and construction employment. Residents who were looking for employment on the project completed detailed questionnaires and application forms. From these applications, 21 people were chosen for training in operations and maintenance skills, and a list of those interested in construction employment was started. The list will be updated regularly with new applicants, and will serve as an "inventory" of Yukon residents, permanent Yukon residents and Mackenzie District residents who are interested in pipeline jobs.

Throughout the year, senior Agency officials continued to consult with the Government of the Yukon and the Yukon Advisory Council. One of the quarterly Federal-Provincial-Territorial Consultative Council meetings was held in Yukon. Yukon Government and Agency representatives also attended the other Consultative Council meetings held in the western provinces through which the pipeline passes.

The Honourable H.A. (Bud) Olson, Minister of State for Economic Development and Minister responsible for the Northern Pipeline Agency, visited Whitehorse in May when he met with the Yukon Government, the Chamber of Commerce and the Chairman of the Yukon Advisory Council.

The Agency helped to arrange for the Special Committee of the Senate on the Northern Pipeline to tour through Yukon, Alaska and the Northwest Territories in June. This trip was organized to enable the Committee to gain a first-hand understanding of the implications of resource development for northern Canada.

During the fiscal year, Foothills prepared draft socio-economic and environmental plans, which the Agency reviewed. In February 1982, Foothills held consultations with communities along the pipeline route on the various plans relating to the project.

The Agency has also reviewed the Company's proposals for the pipeline's route and the location of related facilities to identify potential socio-economic, environmental or technical conflicts.

***Plans for 1982-83***

It is expected that the socio-economic and environmental terms and conditions for the Yukon segment of the Alaska Highway Gas Pipeline Project will be promulgated by the Governor-in-Council. Consideration of the terms and conditions was deferred pending a review of the possible implications of the mobility rights contained in the proposed Canadian Charter of Rights and Freedoms.

The proposed Yukon terms and conditions require hiring preference to be given to Yukon and Mackenzie District residents.

Following approval of the terms and conditions, Foothills will complete the project's socio-economic and environmental plans for review and approval by the Agency. All plans must be approved before mainline construction begins.

Final submissions to the EARP Panel are scheduled to be completed by the Company. The review process is expected to be concluded following further public hearings by the Panel in the summer of 1982.

The Agency will continue to work with other federal departments, the Yukon Government, and Foothills to complete the selection of the right-of-way and related facilities for the pipeline project in Yukon.

The Crown easement agreement is expected to be finalized this year in preparation for right-of-way approval.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 459 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 156 | 34.0 |
| Protection of the Environment | 152 | 33.1 |
| Economic Growth | 151 | 32.9 |

# Northern Transportation Company Limited

***Responsibilities***

Northern Transportation Company Limited company was incorporated federally in 1947 and has continued its operations under the Canada Business Corporation Act since 1977. The Company is a profit-oriented commercial Crown corporation whose primary objective is to provide economic, reliable and comprehensive transportation and related services in Northern Canada and the Arctic.

Northern Transportation has provided marine transportation services throughout the Mackenzie River Watershed since 1934, and along the Western Arctic Coast and islands since 1957. Keewatin operations out of Churchill, Manitoba were inauguratedin 1975. Since then the Company has been providing re-supply services to five communities along the west coast of Hudson Bay and Coral Harbour on Southampton Island.

***Review - 1981***

The Company transported 348 000 tonnes of cargo in 1981, an increase of 14 per cent over the previous year. Community re-supply accounted for slightly more than half of the total tonnage.

Marine operations were again seriously hampered by low water conditions throughout the Mackenzie River Watershed, particularly during the latter part of the season. Considerable hull damage was sustained and the decreased carrying capacity of the fleet necessitated the deployment of additional marine equipment. As a result, operating expenses were higher than normal for the volume of traffic handled. In addition, a number of tugs and barges had to be wintered in Inuvik and Tuktoyaktuk because it eventually became impossible to pass through the limestone ridge that straddles the Mackenzie River at the "Ramparts".

Despite the difficult operating conditions, the Mackenzie and Arctic sectors produced a 20 per cent increase in tonnage over last year. Slightly over 273 000 tonnes of cargo was delivered to points along the River, isolated communities and defence installations in the Western Arctic, and to exploration staging sites in the Beaufort Sea. The volume of community re-supply cargo remained relatively stable and the increase in these sectors therefore is attributable to the oil and gas exploration industry. Traffic bound for Alaska in 1981, consisting of tubular products as well as a large drilling rig, was more than double that of the previous season. In the Canadian sector of the Beaufort Sea, exploration cargo increased by 23 000 tonnes.

Some difficult operating problems occurred in the Athabasca sector at the end of the season. Low water conditions and a sudden cold spell in early October brought navigation to an abrupt halt, with marine equipment becoming frozen-in at various locations along the Athabasca River. Later, a break in the weather enabled the Company to reactivate two vessels to deliver some urgently required fuel to Camsell Portage, a small community on the north shore of Lake Athabasca. The weather also enabled four stranded barges to be moved to a point where dry cargo could be retrieved by bush road. As well, barges at Fort McMurray were offloaded and the cargo was returned to shippers or stored for delivery next season.

Traffic levels in the Keewatin declined for the third consecutive year. The 11 per cent decrease in 1981 was attributable mainly to a consolidation of bulk fuel inventories.

Operationally, the Keewatin sector was relatively problem-free. Weather conditions were exceptionally favourable. As a result, all cargo was moved in record time.

***Outlook - 1982***

Within the past year, exploration activity in the Beaufort Sea has increased significantly and tonnage estimates prepared by the oil companies for the next decade show a further substantial increase. The magnitude of the increase in traffic demand will depend, of course, on the extent to which the industry carries through with its currently envisaged programs. Approval of the Norman Wells pipeline will also generate additional traffic during the construction phase.

There is no doubt that the recently announced decision to close the Eldorado mine at Uranium City will significantly affect the Company's operations in the Athabasca sector. Last year, approximately 70 per cent of traffic originating in Fort McMurray was destined for Uranium City. In addition, completion of the bridge across the Athabasca River at Fort MacKay, Alberta will have the effect of further reducing traffic in this area.

Tonnages to the Keewatin communities appear to have stabilized and longer-term growth in this sector will depend largely on developments in the mining industry, particularly in the Baker Lake area.

# Public Service Commission of Canada

***Responsibilities***

The Public Service Commission of Canada (PSC) administers the Public Service Employment Act, which provides for equality of access to the Public Service for all Canadians. The PSC develops and administers standards for selecting candidates for the Public Service. The P.S.C. provides appeal mechanisms for appointments that are challenged and audits and manner in which individual departments carry out their staffing activities. The PSC also conducts and advises on training programs for public servants.

In the North, the federal government departments that operate there and the Public Service Commission share the responsibility for policies relating to employment in the Public Service.

***Review 1981-82***

The Staffing Branch of the PSC, which has been fully operational in the Northwest Territories and the Yukon for over three years, continued to provide a full range of staffing services to the federal departments and agencies north of 60°.

The district staffing offices in Whitehorse and Yellowknife maintained ongoing employment information and counselling services for northern residents. These offices also provided advice and assistance on personnel matters to federal managers.

In 1981-82, special efforts were made to implement the PSC's "Staffing in the North" policy. This policy is intended to encourage federal departments to recruit and develop northern residents including indigenous people, to fill positions in the North whenever possible.

An evaluation of the impact of the "Staffing in the North" policy, conducted by the Public Service Commission in 1981, indicates that it has enjoyed a measure of success. Since the policy's implementation in June 1980, most administrative and technical positions below the senior management levels have been filled by qualified northern residents. In the Scientific and Professional category, particularly health care and engineering, the shortage of qualified northerners has necessitated staffing south of 60°. Although the policy has not directly affected the employment of indigenous people to any great extent, it has, from the PSC's perspective, encouraged some departments to consider the Northern Careers Program (NCP).

Established in 1974, the NCP is operated by the PSC for the federal departments in the N.W.T. and the Yukon. The Program provides an opportunity for participants recruited from the northern indigenous population to acquire skills that will prepare them to compete for permanent positions within the Public Service. With individually designed career plans, the participants receive on-the-job and formal training for up to two years.

As of December 1981, 275 Indians, Inuit and Métis had been recruited. Of these, 104 had completed full career plans and had "graduated"; 45 had transferred to positions equal to, or higher than the positions they held at entry; 60 participants had withdrawn from the program and 66 were currently undergoing training. Many of the participants who withdrew found new and better employment with other levels of government in the North.

In 1981, the Treasury Board recommended a review of the Northern Careers Program. An evaluation steering committee carried out the review. The committee included, among others, representatives of the northern indigenous associations and the Inuit Tapirisat of Canada. The recommendations of the committee are as follows: (i) The Program should continue and be co-ordinated by the Joint Council - a body consisting of representatives of the Treasury Board, the PSC and the five national indigenous associations; (ii) The PSC should have budgetary as well as administrative responsible for the Program rather than share it with Indian and Northern Affairs; (iii) The scope of the Program should be expanded to 150 person years over a period of two to three years, and an Eastern Arctic regional office should be established.

While the Treasury Board and PSC are still reviewing some of the recommendations, others have already been acted upon. For example, the NCP has been transferred to the Staffing Branch of the Commission. The NCP now forms part of the PSC's Indigenous Participation Programs unit, which also includes the Office of Native Employment (ONE).

Through the PSC district offices in Yellowknife and Whitehorse, the Office of Native Employment continued to promote employment opportunities for indigenous people interested in careers with federal departments and agencies in the North. The ONE also provided support and advisory services to the Joint Council and was a member of the Council's Work Group.

***Plans for 1982-83***

Particular emphasis will continue to the placed on exposing northern residents to federal employment opportunities and on promoting employment of more northern people.

The district staffing offices will continue to provide a full range of recuitment, referral and staffing services.

The Office of Native Employment will continue its work to increase employment opportunities for indigenous people in federal departments and agencies in the North.

The Northern Careers Program will continue to ensure broad participation by departments, agencies and indigenous associations and will recruit northern indigenous people for training positions.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 2 266 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 2 266 | 100.0 |

# Public Works Canada

***Responsibilities***

Public Works Canada (PWC) is the largest construction and real property management organization in Canada providing services to other Government departments and agencies. PWC provides a wide variety of architectural, engineering and construction services. It assists in planning and design work, investigating possible building sites and carrying out feasibility studies. The Department is also responsible for constructing and managing buildings, public utilities, highways, harbours and wharves. It also acquires and disposes of land and properties. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings.

In the North, the Department is involved in housing and transportation. It provides accommodation for federal government employees and designs, constructs and maintains the ever-expanding highways system in the Yukon and the Northwest Territories. PWC also keeps water transportation routes navigable in the North through its dredging activities.

## Western Region

***Review 1981-1982***

Highway construction on behalf of the Department of Indian Affairs and Northern Development continued this year on the Liard Highway only. This highway, which will link the Mackenzie and Alaska Highways, is now 80 per cent complete. Total construction costs for this year were $10 470 000.

Maintenance dredging on the Mackenzie River Waterway was carried out at a cost of $1 013 000.

A $1 229 000 contract was awarded to build the final phase of the Frobisher Bay housing project.

Construction was completed on the Holman Island Nursing Station and Residence, on behalf of Health and Welfare Canada, at a cost of $984 345.

The sum of $125 000 was spent to alter the roof of the Gjoa Haven nursing station.

A maintenance survey to locate mechanical and electrical deficiencies was undertaken in all northern nursing stations in the Mackenzie and Inuvik zones.

An addition to the Core Library in Yellowknife was built on behalf of Indian Affairs and Northern Development at a cost of $412 874.

The insulation and vapour barriers were improved in Crown housing in Fort Smith and Fort Simpson, at costs of $200 000 and $50 000 respectively.

Two new RCMP Detachment buildings costing $290 000 and $310 000 were completed in Tuktoyaktuk and Coppermine respectively. An amount of $135 000 was spent to relocate the Hay River Detachment building in Pine Point.

New RCMP married quarters were built in Tuktoyaktuk at a cost of $325 000. A $135 000 married quarters building in Fort Franklin is nearing completion.

An $80 000 contract was completed for renovating the front entrance to the RCMP Subdivision Building in Yellowknife.

An energy retrofit of two RCMP duplexes in Fort Smith was completed at a cost of $160 000.

Bailey Bridge at Km 138.25 Nelta River on the Liard Highway.

***Plans for 1982-83***

Construction will continue on the Liard Highway, and the road is expected to be open to traffic in November 1982. Crushed gravel surfacing must be completed over approximately 150 kilometres before the highway is turned over to the Government of the Northwest Territories.

The plans and specifications for continuing the Mackenzie Highway to Norman Wells are expected to be finalized by the end of this year. The last construction was undertaken in 1977 near Wrigley.

A small test embankment will be constructed near Inuvik on the proposed Inuvik-Tuktoyaktuk Highway, in order to test the suitability of relatively high ice content fine grained material for road construction.

Maintenance dredging will continue on the Mackenzie River Waterway and a study will be undertaken to assess requirements for dredging at Ramparts Rapids.

Insulation upgrading projects for Hay River, Inuvik, and Pine Point are planned at estimated costs of $200 000, $100 000 and $45 000 respectively.

A new $1 150 000 Nurse's Residence and a new design for the Nursing Station are planned for Aklavik. A study will be conducted on Inuvik Hospital to define project requirements.

RCMP projects planned for 1982-1983 will include replacing the door of its aircraft hangar at Inuvik at an estimated cost of $105 000, building a new warehouse in Yellowknife at an estimated cost of $40 000, and constructing new houses in Aklavik and Tuktoyaktuk at estimated costs at $145 000 and $170 000 respectively.

## Pacific Region

***Review 1981-1982***

Routine maintenance of the Northwest Highway System in Yukon continued under the agreement with the Government of Yukon. A total of 170 km of B.S.T. (bituminous surface treatment — i.e., emulsified asphalt with crushed aggregate blotter) was applied.

Public Works Canada's $10 600 000 capital program on the Northwest Highway System was carried out in the Yukon and included the following projects, which were completed during this year, or are nearing completion:

| | |
|---|---|
| (a) Complete grade construction | |
| Km 1365 to Km 1390 | 100% completed |
| (b) Sub-grade and base course construction | |
| Km 1251 to Km 1265 | 100% completed |
| (c) Sub-grade and base course construction | |
| Km 1346 to Km 1365 | 80% completed |

Work amounting to $12 850 000 was carried out on Shakwak project (joint U.S. — Canada project funded by the U.S. for upgrading the Haines Road and the Alaska Highway northwest of Haines Junction, Yukon), for the following major projects:

| | |
|---|---|
| (a) Sub-grade construction | |
| Km 70.2 to Km 79.9 Haines Road, B.C. | 80% completed |
| (b) Sub-grade construction | |
| Km 79.9 to Km 88.5 Haines Road, B.C. | 100% completed |
| (c) Surface treatment (B.S.T.) | |
| Km 207.8 to Km 230.4 Haines Road, Y.T. | 100% completed |
| (d) Construction 5 Mile Creek Bridge | |
| Km 77 Haines Road, B.C. | 100% completed |
| (e) Construction of Dezadeash River overflow structures and approaches | |
| Km 254 to Km 254.7 Haines Road, Y.T. | 100% completed |
| (f) Construction and surfacing through Haines Junction Townsite, Y.T. | |

***Plans for 1982-1983***

Routine maintenance of the Northwest Highway System in Yukon will continue under the agreement with the Government of Yukon. B.S.T. will be applied on approximately 215 kms of the System.

The Public Works Canada Capital Program on the Northwest Highway System in Yukon will amount to $7 100 000 and will include the following major projects:

(a) Complete grade construction
Km 1265 to Km 1273
(b) Complete grade construction
Km 1293 to Km 1308

The Public Works Canada Program for Bridges on the Northwest Highway System will be $2 600 000, and will include the following major projects:

(a) Construction of Seagull Creek Culvert and approaches at Km 1180.2
(b) Construction of the Screw Creek Culvert and approaches at Km 1194.2 (B.C.)

Work on the Shakwak Project in the amount of $4 100 000 will be carried out and will include the following major projects:
(a) Completion of sub-grade Km 70.2 to Km 79.9 Haines Road, B.C.
(b) Base course and asphalt pavement Km 70.0 to Km 88.5 Haines Road, B.C. Shakwak windup — only minor projects will be carried out in future years if no funds are forthcoming from the United States Government.

Projects sponsored by the Department of Indian Affairs and Northern Development will include:
(a) Completion in October of the Pacific Region Public Works engineering Liard Highway project in the Northwest Territories.
(b) Pre-engineering survey and design work on the North Canol Road.
(c) Construction of Lower Blackstone River Bridge on the Dempster Highway.

| **Summary of Direct Northern Expenditures (000's)** | $ | % |
|---|---|---|
| *Total Forecast 1981/82* | 29 823 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Administration and Support | 12 591 | 42.2 |
| Economic Growth | 10 131 | 34.0 |
| Quality of Life | 4 220 | 14.1 |
| Evolution of Government | 1 475 | 5.0 |
| Leisure and Recreation | 1 406 | 4.7 |

Styrofoam insulation to prevent frost heaving, km 217 Haines Road - Shakwak Project

# Regional Economic Expansion/ Industry Trade & Commerce

***Responsibilities***
DREE plans and co-ordinates programs designed to overcome regional economic disparities in Canada. In co-operation with the Territorial Governments, the Department of Indian Affairs and Northern Development and other federal agencies, DREE participates in the joint planning and implementation of regional socio-economic programs for those northern areas requiring development assistance.

## Northwest Territories

***Review 1981-82***
Under the General Development Agreement signed by DREE, DIAND and the Government of the Northwest Territories, the Interim Subsidiary Agreement on Community Economic Development was into its final stage of implementation. The Subsidiary Agreement, originally scheduled to expire on March 31, 1981, was extended to provide program continuity to September 30, 1981. The Agreement provides for carrying out priority projects in tourism, the harvesting of renewable resources, job rotation and community planning. It also covers the planning of any longer-term initiatives that may occur in the future. In the 1981-82 year, projects totalling $3.3 million were approved under the Agreement.

Activity under the Special Rural Development Agreement (Special ARDA), signed in 1977, indicates a high level of acceptance of the program by native people of the Northwest Territories. The program provides financial support and technical assistance, particularly to people of Indian or Inuit ancestry, to create jobs and improve socio-economic conditions. Since the program's inception, 273 of the applications for funding have been approved and have involved a commitment of approximately $9.7 million.

The Regional Development Incentives Program (RDIA) provides incentive contributions and loan guarantees to business and industry willing to establish, expand or modernize manufacturing or processing facilities. It is expected that a departmental commitment of $270 000 under the Program will provide 51 new jobs in the Territory.

***Plans for 1982-83***
Current agreements and programs are continuing, and increased activities under the Special ARDA and RDIA are expected.

## Yukon

***Review 1981-82***
In 1977, a General Development Agreement (GDA) was signed between Canada and Yukon. The Agreement established a framework for joint federal-territorial co-operation in planning and implementing programs for economic and social development. Within this framework, two subsidiary agreements are currently providing assistance for Renewable Resource Development and Tourism Development.

The Renewable Resource Development Agreement provides for $6.6 million, including more than $3.1 million from the Department of Regional Economic Expansion (DREE). The money will be spent on programs to expand the resource information base and to upgrade such recreational facilities as territorial parks, campgrounds and historic sites in Yukon. Environmental land surveys have been completed for the Southern Lakes and MacMillan Pass areas of the Territory, and work on mapping and reporting is underway. In addition, several smaller resource inventory/planning studies are in progress. Work has also been completed on ten campgrounds and a renewable resource workshop and training complex. Conservation facilities have been upgraded in five Yukon communities. Some of this work and other community development projects were carried out by the Resource Development Corps, which provides training and work experience for Yukon residents.

| Summary of Direct Northern Expenditures (000's) | $ | % |
|---|---|---|
| *Total Forecast 1981/82* | 8 445 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Economic Growth | 8 445 | 100.0 |

Under the Tourism Development Agreement, which was extended to continue programming for an additional year, $6 million, including $3.6 million from DREE, is provided to assist the further development of this industry in the Yukon. Projects to improve downtown Dawson City have been progressing well, and incentives have been offered to the private sector to increase accommodation for tourists and to build appropriate facades for buildings in the historic zone of the town. In Whitehorse, a ski chalet was completed, which enabled the city to host the 1981 World Cup and North American Championships for cross-country skiing. It is expected that this $1.5 million facility will contribute to lengthening the tourist season and that it will be used to accommodate business conventions. Work has also started on Visitor Information Centres at Dawson City, Whitehorse and Watson Lake.

The Special Rural Development Agreement (Special ARDA) provides financial support and technical assistance to rural people, particularly those of Indian ancestry, for development of employment opportunities and improvement of socio-economic conditions in the Territory. From the inception of the program in June 1978, 224 applications have been received, which have resulted in 93 accepted offers to commercial, primary producing and social adjustment projects. DREE has committed $3.4 million to this program to date which is expected to result in 225 jobs.

Incentive grants are also provided to qualifying enterprises under the Regional Development Incentives Act (RDIA), to establish, expand or modernize manufacturing or processing facilities in Yukon. Since June 1978, a total of $1.9 million has been offered to six projects expected to create 53 jobs.

***Plans for 1982-83***

Current agreements and programs are continuing and increased activities under the Special ARDA and RDIA are expected. Planning and negotiations are underway with the Yukon Territorial Government and other federal agencies to develop a more comprehensive approach to economic development. This approach will emphasize providing assistance to business and developing human resources.

# Revenue Canada

## Customs and Excise

***Responsibilities***

Customs controls the international movement of goods, persons and "conveyances" (vehicles, airplanes, ships, etc.) and collects duties and taxes due on imports

Excise administers the provisions of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act and related regulations. The Branch issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

***Review of 1981-82***

*Yukon - Customs Activities*

The Port of Whitehorse and the offices reporting to it administer and enforce Customs laws and regulations throughout Yukon. The Territory is serviced by all modern transportation methods used to move goods and passengers into and out of Canada.

To accommodate this traffic, Customs Offices are maintained at Beaver Creek, Pleasant Camp, Dawson and Whitehorse and, during the summer months, at Little Gold Creek and Fraser. These offices provide service at six locations approved as Customs airports of entry, and at the highway sufferance warehouse at Whitehorse. The R.C.M.P. carry out Customs formalities at Old Crow on behalf of the Department. Since 1978, special arrangements have been made to accommodate river traffic leaving and re-entering Canada by the Yukon-Porcupine River route.

*Yukon - Excise Activities*

Excise carries out its responsibilities in the Yukon by having Excise auditors visit licensed businesses periodically in such communities as Whitehorse, Teslin, Dawson City, Watson Lake and Faro. (There are 37 Excise licences in the Territory.) In 1981-82, the Excise auditors visited businesses in these locations to conduct audits, provide tax information and, as required, assist in the processing of refund claims.

*Northwest Territories - Customs Activities*

In view of the increased activities in the eastern Arctic, the Department established Frobisher Bay as an outport staffed full time by Customs personnel. The Frobisher Bay office is under the purview of the Port of Ottawa.

During 1981-82 exploration activities, both commercial (the development of oil and mineral resources) and non-commercial (geographical, scientific and mountaineering expeditions) continued to expand. These activities meant increased cargo deliveries, which required closer surveillance and monitoring by Customs.

The volume of imported and exported cargo increased markedly from the previous fiscal year. Most shipping activity involved delivering oil exploration and mining supplies and petroleum products to numerous locations in the Territories, particularly the mining community of Nanisivik. Special arrangements continue to accommodate offshore drilling activities in the Beaufort Sea and the Baffin Island area.

### *Northwest Territories - Excise Activities*

Despite increased business activity in the Northwest Territories, the headquarters of business firms having Excise licences are located mainly outside the N.W.T. However, the Branch does have 11 licensees in the N.W.T. and in 1981-82 Excise personnel visited Yellowknife, Hay River and Fort Smith to carry out audits, process refund claims, provide tax information and inspect the operation of a bonding warehouse.

### *Plans for 1982-83*

The Department has decided to carry out detailed studies of the problems related to administering Customs and Excise programs in the North. These studies are necessary because of the increase in commercial activities in the Territories and the Arctic Archipelago. The studies will concentrate on determining how the Department will continue to provide Customs service to remote areas, and on its long-term policies and strategies for maintaining Customs control of offshore oil and gas industries located in the North.

The following lists show those Departments, other than Customs and Excise, that carry out Customs' duties at specified locations:

*Royal Canadian Mounted Police*
Baker Lake
Cambridge Bay
Clyde River
Coppermine
Eskimo Point
Grise Fiord
Lake Harbour
Nanisivik
Pangnirtung
Pond Inlet
Resolute Bay
Sachs Harbour
Spence Bay
Tuktoyaktuk
Yellowknife

*Department of National Defence*
Cape Dyer
Cape Parry
Hall Beach

*Department of Environment*
Eureka
Mould Bay

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 716 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Sovereignty and Security | 716 | 100.0 |

# Royal Canadian Mounted Police

## "M" Division

*Yukon*

***Responsibilities***

The Royal Canadian Mounted Police (R.C.M.P.) in "M" Division (Yukon Territory) provide all policing services to the Yukon Territory. Under contract to the Territorial Government, the R.C.M.P. enforce the provisions of the Criminal Code and the Territorial Ordinances. Through contract and non-contract personnel, the R.C.M.P. also fulfil a federal role, being responsible for enforcing various federal statutes and regulations.

Currently, the Force has 115 regular members in the Yukon (including 15 Special Constables), 8 civilian members and 17 public servants. Detachments are located at Old Crow, Dawson, Mayo, Beaver Creek, Carmacks, Whitehorse, Carcross, Teslin, Watson Lake, Faro, Ross River and Haines Junction. Sub-detachments are located at Destruction Bay and Pelly Crossing. The Divisional Headquarters of "M" Division is in Dawson City.

***Review 1981-82***

The number of non-traffic Criminal Offenses committed in the Yukon increased 19 per cent over the previous year, while federal offences increased by 28 per cent.

Criminal Code traffic offences decreased 9 per cent in 1981, while territorial traffic offices increased by 9 per cent. The total number of reportable traffic accidents increased by 272, from 1 234 to 1 506. There were 20 traffic fatalities in 1981.

The Native Policing Program, sponsored by the Department of Indian and Northern Affairs, has again successfully trained native people to take up positions as native special recruits and clerk/stenographers, both inside and outside the Force.

During the summer of 1981, the Summer Students Employment Program hired four university students as "Supernumerary Special Constables." The Division will continue with the Program in 1982.

In August 1981, 12 R.C.M.P. Members took part in the Dempster Highway Run for the Disabled, a relay-run from Inuvik, N.W.T. to Dawson City, Yukon. The R.C.M.P. and the Lions Club jointly sponsored this project to raise funds for the disabled. The run covered a distance of about 770 km along the Dempster Highway. Through this project, the three Whitehorse area Lions Clubs realized about $40 000 for the Yukon Special Olympic Committee. Part of the money was used to buy a van equipped with a wheelchair-lift.

Various other projects related to crime prevention and police-community relations continued to receive high priority within "M" Division.

The R.C.M.P. Training Program was increased over the past year to include such courses as "Small Boat Operators", "Effective Presentations", and "First Aid". Several other courses were offered, a number of which included trainees from other government departments. Of particular interest was the Cross Cultural Training Course for which there is a great demand. The Course's training philosophy is "Train to Needs".

During the year, new R.C.M.P. Detachment offices were constructed and occupied at Dawson City and Watson Lake. In addition, a new 3-bedroom married quarters unit was built at Haines Junction. Major renovations to the Old Crow Detachment/Quarters building were also carried out. The new quarters now accommodate two married members and their families.

***Plans for 1982-83***
A new Detachment Building will be constructed at Haines Junction, and considerable renovations to the existing Teslin Detachment Building will be undertaken. Provided that funds remain available, other renovations and construction will be carried out to meet projected requirements.

### "G" Division

*Northwest Territories*

***Responsibilities***
The Royal Canadian Mounted Police "G" Division provides policing services to the Northwest Territories under contract to the Territorial Government. These services, with headquarters in Yellowknife, encompass both Federal and Territorial police responsibilities. There are three sub-divisions and 38 detachments. Three air detachments at Yellowknife, Inuvik and Frobisher Bay, supply air support services.

***Review 1981-82***
Although the Northwest Territories continue to have the highest crime rate per capita, overall crime has remained stable during this period. Crimes against persons were down slighty, but crimes against property increased 12 per cent. Most of the serious crimes occurring in the Northwest Territories are related to alcohol abuse.

The Regular Patrol Service (R.P.S.) to settlements that do not have permanent detachments is working well. There are 63 settlements in the N.W.T., of which 25 are served by the R.P.S. Twelve of these have police patrol cabin facilities.

Efforts continued in 1981-82 to recruit native people to serve on the Force. As of the end of 1981, there were three vacancies for Special Constables in the central and eastern Arctic.

The Option 3(b) (Special Constable) Program is continuing, with the involvement of our Native Policing Co-ordinator. During 1981-82, three applicants were accepted and posted to Sanikiluaq, Igloolik and Fort Simpson.

***Plans for 1982-83***
Fiscal restraint has limited new construction in 1982-83 to one patrol cabin at Nahanni Butte.

Plans are underway for 1983-84 to provide married quarters for the Option 3(b) Program at Fort Rae, Fort Providence, Fort McPherson, Aklavik and Tuktoyaktuk.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 26 845 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 13 422 | 50.0 |
| Sovereignty and Security | 13 423 | 50.0 |

# Department of the Secretary of State

## Citizenship Program

***Responsibilities***

The Department's offices in the Yukon and Northwest Territories receive requests from voluntary associations for technical advice on, and assistance and grants for, certain community activities. For instance, the Department encourages native groups to participate fully in the North's changing society, while preserving their own cultural heritage. It is also concerned with preserving both the rights of official language minority groups, and their cultural identity within their communities.

***Review 1981-82***

Program services for the Northwest Territories were administered through an office in Yellowknife (reporting to the Alberta Regional Office effective April 1, 1982).

The Native Citizens' Directorate provided technical and financial support to native associations, women's groups, friendship centres, social and cultural development projects and communications societies. It also assisted in bringing film and slide productions to remote communities.

The Multiculturalism Directorate supported an increasing number of projects. These related to such areas as writing and publications, language teaching aids for Inuit and Indian groups, Canadian Ethnic Studies in Native affairs and Inuit music, and performing and visual art productions.

A new office was also opened in Whitehorse on June 18, 1981, reporting through the Pacific Regional Office in Vancouver. During the year, the office was active with native, ethnocultural, francophone and women's groups and other community organizations.

The Official Language Minority Groups Directorate in the Yukon was involved in the development of a Franco-Yukon citizens group. A chapter conference of Canadian Parents for French was supported. The Quebec Regional officer continued to work closely with native groups in northern Quebec.

***Plans for 1982-83***

The Department will continue to offer financial, technical and professional services to community groups in Northern communities. Such groups include native groups, official language minority groups, ethno-cultural groups, women's groups and other groups that are pursuing objectives consistent with departmental objectives and priorities.

In addition, the Department will continue to encourage youth exchanges through its Open House Canada Program.

The Official Language Minority Groups Directorate will be providing technical and financial assistance to the Association culturelle franco-ténoise, located at Yellowknife, N.W.T. to support the social and cultural development of the French-speaking community in that area. In addition, the Department intends to provide support to the Canadian Parents for French, Yukon and Yellowknife Chapters.

## Official Languages in Education

***Responsibilities***

The programs provide assistance to provinces and Territories to develop and maintain minority official language education and second official language instruction.

The programs also help provincial, territorial and municipal administrations to serve the public in both official languages.

***Review 1981-82***

At the request of the two Territorial Governments, the program continued to provide financial assistance to the official languages programs of each Department of Education. The total allocation was $269 000.

Funding by the program will enable the N.W.T. to hire a French language co-ordinator. It will also be able to award study fellowships to post-secondary students, pay for full-time monitors to assist French language teachers, provide text books and other resources for teaching French and provide in-service training and bursaries for French language teachers.

In the Yukon, federal assistance for French language programs helped to provide French immersion classes in Whitehorse, the salary for a full-time co-ordinator of French courses, full-time French language monitors, bursaries for French language teacher training, support for the expansion of in-service training programs and career development programs for teachers, and bursaries for post-secondary students. The Bursaries will enable them to take summer immersion courses in an official language.

### Fitness and Amateur Sport Program

***Responsibilities***

The Fitness Canada Directorate mounts programs to raise the fitness level of Canadians by encouraging people to follow healthy lifestyles and to participate in amateur sport and recreation activities. The Sports Canada Directorate encourages amateur sports, through their governing bodies, to arrange national and international competitions. Responsibility for Fitness and Amateur Sport was transferred from the Department of Labour to the Secretary of State in September 1981.

***Arctic Winter Games***

Every two years, representatives of Alaska, the Yukon and Northwest Territories take part in the Arctic Winter Games, an international festival of sport and culture. These Games form a common ground for developing athletes and provide a forum for exchanging cultural and social interests among people of the North. Some 900 participants gathered in Whitehorse for the 1980 Games. The VIIth Arctic Winter Games will be held in Fairbanks, Alaska in 1982.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 4 684 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 1 916 | 40.9 |
| Social and Cultural Development | 1 863 | 39.8 |
| Evolution of Government | 383 | 8.2 |
| Leisure and Recreation | 383 | 8.2 |
| Administration and Support | 139 | 2.9 |

# Statistics Canada

***Responsibilities***

Statistics Canada is the country's central agency responsible for collecting, analyzing and disseminating data on economic and social conditions and activities in Canada. It maintains a program of consultation and liaison with the Government of the Yukon and the Northwest Territories and offers technical support for their statistical activities.

***Review 1981-82***

The most significant event of the year was the 1981 census, Statistics Canada's largest single undertaking. Final population figures from the census were released on March 30, 1982 and showed Yukon's population at 23 153, a 6 per cent increase from 1976; the population of the Northwest Territories was 45 741, up 7.4 per cent from 1976.

Census operations were designed to take into account the special problems of carrying out a complete and accurate enumeration in the North. Although June 3, 1981 was the official Census Day for all of Canada, some parts of the Yukon and the Northwest Territories had been enumerated up to 12 weeks earlier. This early enumeration was carried out to ensure that populations migrating from winter settlements in June would be included in the count, and because climatic conditions in June can prevent enumerators from reaching some locations.

The low population density in the Yukon and the Northwest Territories made it impossible to collect data by using the "sampling method". (This method, which was used in the rest of the country, consisted of distributing a short questionnaire to four of every five residents, and a long questionnaire to the fifth.) Consequently, all households in the North, with the exception of residents of Whitehorse, Yukon, received the long questionnaire. The larger size of Whitehorse made sampling feasible in that City.

The 3.8 million square kilometres of the Yukon and the Northwest Territories were covered by a census workforce of 181 — two census commissioners and 48 enumerators were responsible for the Yukon, and six census commissioners and 125 enumerators covered the Northwest Territories.

In larger northern communities, such as Whitehorse, Yellowknife, Hay River, Fort Smith, Pine Point and Inuvik, questionnaires were delivered to households and collected later (the drop-off/pick-up method), while in other areas, enumeration was done through personal interviews.

An advertising campaign with a "Count Yourself In" theme promoted awareness of the census in a personal way. Radio commercials were aired in languages of various northern audiences. Television commercials were broadcast over the CBC Northern Broadcasting Network and the Inuit network "Inukshuk".

Data from the 1981 census provide information vital to planning local services, administering legislation and evaluating social programs for the northern population.

**Census enumerator Viki Ruben makes one of her calls in Pelly Bay, a small Inuit village in the Northwest Territories.**

In addition to carrying out the census, Statistics Canada continued to investigate the feasibility of establishing Consumer Price Indexes (CPI) for Whitehorse and Yellowknife. The decision was made to introduce a CPI for each city in late 1982.

A pilot test was lauched in July 1981 to assess the feasibility of extending the Labour Force Survey to the Yukon. The test will continue for 12 to 15 months and will determine what labour force information will be made available on a regular basis.

Statistics Canada continued to produce cost of living indexes for northern locations so that salary allowances for federal employees posted there can be calculated. The indexes take into account the difference in retail prices and living costs between an "isolated" post and the major city that supplies its goods and services.

### *Plans for 1982-83*

Consumer Price Indexes for Whitehorse and Yellowknife will be introduced in the latter half of 1982. This will make it possible to measure changes over time in the purchasing power of the consumer dollar in both cities.

The pilot test to assess the feasibility of extending the Labour Force Survey to the Yukon will continue.

Information from the 1981 census will be published as data are processed and analyzed. Figures on the geographic distribution of population in the Yukon and the Northwest Territories were published June 30, 1982. Figures on selected characteristics of the territorial populations will be released on February 28, 1983.

# Transport Canada

## Arctic Transportation Directorate

***Responsibilities***
The Arctic Transportation Directorate has been merged with the Government Relations Branch, which provides co-ordination and liaison between The Department of Transport and the provincial and Territorial Governments. This co-ordinating role not only encompasses planning and development work within the Department, but also extends to the activities of other federal departments and the Territorial Governments.

***Review 1981-82***
During the year, the Directorate was involved in a large number of projects and issues relating to northern transportation. As the Department's representative on the federal government negotiating team, the Directorate continued to be involved in the negotiating process for comprehensive native claims. On behalf of the Canadian Coast Guard the Directorate studied alternative ways to co-ordinate the annual eastern Arctic sealift. The outcome of the study was a renewal of the Coast Guard's mandate for an additional five years.

The Directorate also contributed to studies of Mackenzie River dredging operations and on the relationship between the Department of Transport and market-oriented Crown corporations, particularly the Northern Transportation Company Limited (NTCL). The Directorate continued to represent the Department's interests in providing employee housing in isolated areas and environmental assessment and review.

The Department agreed to help organize a conference sponsored by the Canadian Tranportation Research Forum on northern transportation. The Directorate provided all secretarial and other co-ordinative services to the conference organizing committee. The conference will take place in October 1982.

A Joint Air Service Planning and Evaluation Review (JASPER) study for Arctic Quebec was conducted for a joint Canada/Québec inter-agency committee.

The reports on Arctic Aviation weather requirements and passenger traffic were completed and issued as public documents.

Work continued in conjunction with the Canadian Air Transportation Administration on revising the Arctic airports policy. The 1979 program was extended to March 31, 1982.

## Canadian Air Transportation Administration

The Canadian Air Transportation Administration (CATA) is responsible for developing a safe, efficient national civil air transportation system that contributes to meeting government objectives. The Administration is also responsible for operating specific parts of this system. For example, CATA's northern activities include providing airports, air traffic control services and navigational aids for domestic and international air routes. The Air Administration also works with the Arctic Transportation Branch in carrying out strategic and master planning for northern air transportation. In addition, CATA budgets for and implements approved projects.

Policy formulation and national systems management are centralized at Ottawa headquarters. However operational responsibilities rest with six regional offices, three of which — Quebec, Central and Western — are concerned with CATA's northern activities.

M.V. Arctic navigating in ice.

*Arctic Air Transportation Facilities Policy*

The Arctic Air Transportation Facilities Policy, approved in 1974, provides funding for constructing and operating airports and air navigational aids in the Yukon and Northwest Territories. It also provides funds for training locally hired airport maintenance staff and weather observer/communicators.

Under the Policy, airports are classified as Arctic A, B or C, according to a number of characteristics.

Arctic A airports are major airports that serve larger communities and have scheduled jet aircraft operations. The Department of Transport owns these airports and operates them either directly or under contract. Arctic B and C airports serve the needs of smaller communities and usually are not operated by the Department.

Of the 62 airports currently included in the Arctic Air Facilities Program, 11 are classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have, for the most part, been made to restore or replace facilities and equipment. Total capital expenditures to the end of 1981-82 were approximately $29 million, compared with the financial ceiling approved in 1977 of $56 million. The current approved capital expenditure level for completing the B and C airports program is $81 million. Approximately $53 million has been spent at some 40 sites as of March 31, 1982.

The Administration and the Arctic Transportation Directorate began a review of the Arctic Air Facilities Policy in 1979-80. Last year, a draft of the report was sent to the Territorial Commissioners, federal departments and the aviation industry for comments. The report recommends that the CATA national airports classification system be extended to the Arctic to replace the current "Arctic A, B or C" system. The report also recommends that airport facilities should be provided only to communities that are located more than three hours surface travel time from an airport with regular commercial air services, and that there should be more flexiblity in determining runway lengths and other airport facilities. Three options were presented for the future:

i) Let the Arctic Air Facilities Policy expire.

ii) Renew the policy with changes for a further five-year period.

iii) Develop a new policy administered and controlled by Territorial Governments.

A Cabinet discussion paper is being prepared in consultation with the Department of Indian Affairs and Northern Development. This paper should be available to ministers for their consideration in the summer of 1982.

**Civil Aeronautics**

The Civil Aeronautics Directorate is responsible for regulating aviation activities in Canada and for providing air navigation services. The air navigation services activity includes designating air routes; inspecting and calibrating navigational aids; inspecting runways, taxiing strips and tarmacs; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system in Canadian airspace and in that international airspace for which Canada has accepted responsibility through the International Civil Aviation Organization (ICAO); and funding meteorological services in support of aeronautics.

The regulatory activity includes developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; inspecting aircraft manufacturing and repair; and investigating aircraft accidents and safety-related incidents.

*Aeronautical Licensing and Inspection Branch*

As of December 31, 1981, 458 valid licences and permits were held by persons residing in the Yukon and 515 by persons residing in the Northwest Territories.

The Transport Canada G-11 (CF-CFB) aircraft continued to carry out flight inspections throughout the Arctic and successfully completed a full year of gathering OMEGA coverage information. This information is being processed by the United States Federal Aviation Authority and will soon be available in map form.

*Air Traffic Services Branch*

Air Traffic Services (ATS) continued to provide control services for flights operating under Instrument Flight Rules (IFR) as well as an alerting service for aircraft known to be in difficulty and for all overdue aircraft on flight plans or flight notifications.

For air traffic control purposes, the high level airspace in Canada has been divided into three general areas: the Arctic Control Area, the Northern Control Area and the Southern Control Area. Control services were provided to all flights operating within these areas, using the Arctic Domestic High Level Airway Network. In addition, flights with sophisticated, self-contained airborne navigation systems were accommodated on great circle and minimum time, direct tracks.

In the low-level airspace, control service was provided to IFR flights operating along designated airways and within control area extensions. North of 60°, these control area extensions are provided at Fort Smith (50 nautical mile (NM) radius), Hay River (50), Norman Wells (50), Yellowknife (50), Frobisher (40), Inuvik (40), Whitehorse (40), Fort Simpson (26), Teslin (25) and Watson Lake (25). Control zones for additional protection and improved service are provided at the following airports: Fort Simpson (5 NM radius) Frobisher Bay (5), Norman Wells (5), Watson Lake (5), Inuvik (5), Hay River (10), and Fort Smith (10). Positive control zones with established Transport Canada control towers are located at Whitehorse (5 NM radius) and Yellowknife (5).

Aerodrome traffic zones provide protection for aircraft operating at uncontrolled airports. These zones of 5 NM radius are located at: Baker Lake, Cambridge Bay, Coral Harbour, Deception Bay, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley.

To provide for these activities, Air Traffic Services operates an extensive dedicated voice telephone network to locations in the North along with voice communication between Edmonton, Montréal, Moncton, Frobisher, Chimo, Resolute Bay, Gander and Reykjavik.

In addition, to assist in the movement and control of IFR traffic, the Edmonton Area Control Centre has direct controller-to-pilot communications through peripheral (PAL) remote transmitting and receiving systems at Hay River, Inuvik, Norman Wells, Whitehorse and Yellowknife. The Winnipeg Centre also has a PAL located at Churchill.

*Telecommunications and Electronics Branch*

The Telecommunications and Electronics Branch operates a network of Flight Service Stations (FSS) in the Northwest and the Yukon Territories. These stations are staffed by approximately 130 flight service specialists who provide aeronautical communications and related flight services to the northern aviation community.

A number of remote communications outlets (RCOs) have been established to supplement the service provided by staffed stations.

In addition, development of a network of Community Airport Radio Stations (CARS) continued. For example, Sachs Harbour, N.W.T., formerly served by an FSS, is now served by a CARS, and a similar change is proposed for Teslin, Y.T., in 1982.

The training program for observer/communicator staff assigned to the CARS has now been completed and implemented. All training is carried out by the territorial governments with certification of personnel being done by Transport Canada.

Many improvements were made to Flight Service Stations and facilities during 1981. An FSS service at Inuvik, N.W.T., was relocated to the control tower during peak periods to improve field visibility and the quality of airport advisory services available at that location. The staff at Tuktoyaktuk FSS was increased from three to four flight service specialists, permitting assignment of two specialists for peak traffic periods. Remote communications outlets (RCO) at Hall Beach and Contwoyto Lake, N.W.T., were commissioned. The latter facility, controlled by the Yellowknife FSS, operates through a combination landline/satellite connection.

More flight service improvements are scheduled in early 1982. VHF/DF service will be established at Whitehorse FSS to supplement the current limited availability from the control tower. This extension will provide 24-hour service. Construction of a new combined terminal/operations building at Baker Lake, N.W.T., began in the summer of 1982. Also, Aviation Weather Information Service (AWIS) will be established at Baker Lake and Rankin Inlet FSS during the coming year.

The reconfiguration of the Automatic DATA Information System (ADIS) circuit 947 into two circuits, 947 and 948, was completed last year, although this was not indicated in the 1980-81 GAIN report. This change has markedly improved the operational efficiency and reliability of the System affecting at least seven northern points on the network.

To provide for or improve ground-to-air communications in the North, approximately 30 VHF AM transceivers, 10 VHF AM transmitter/receiver pairs and five VHF AM multicouplers were supplied in 1981-82.

Finally, the Atmospheric Environment Service and Transport Canada have approached the CBC's Northern Service with a proposal to co-produce a weather program directed at the general public living in the Arctic. The proposal involves studying the feasibility and demands for a special weather program in the Arctic through an 18-month pilot project.

*Aviation Safety Bureau*

Federal government departments that send their employees to the North for either temporary or permanent duty continued to conduct regular training programs emphasizing survival for those who may become lost or involved in a forced landing or crash. The Aviation Safety Bureau advises on the content of aviation safety material in the Treasury Board's safety guidelines, with which all departments must comply.

Continued emphasis is being placed on ensuring that commercial operators are complying with Air Navigation Order Series V, No. 12, Sparsely Settled Areas Order. The Order lists survival equipment requirements for aircraft. The Bureau also holds safety promotion seminars in co-operation with groups such as the Northern Air Transportation Association (NATA). In addition, the Bureau's safety officers visit flying groups and companies in the North as part of a national program. However, on these visits, safety officers emphasize the needs of northern pilots.

**Airports and Construction Services Directorate**

The Airports and Construction Services Directorate is responsible for operating the national airports system. It is also responsible for the planning, design, construction and maintenance of all airport facilities, with the exception of air traffic control and related equipment.

The Directorate has responsibility for establishing national objectives, plans, priorities, policies and standards for providing airport facilities and services. It is also responsible for maintaining security at airports. Finally, the Directorate provides both advisory assistance to community airports and engineering and architectural services to CATA installations (both on and off airports) and to other sections of the Department, other federal agencies and territorial government organizations.

*Quebec Region*

One Arctic A airport (Frobisher Bay) and seven Arctic C airports are located in the Québec region.

The program for converting certain flight service stations to community airport radio stations staffed by observer/communicators has been completed at the seven Arctic C airports within the region.

The following provides a status report on construction at these sites during 1981-82.

**Review 1981-82**

*Broughton Island:* The construction of a new apron (45 m x 72 m) was completed in 1981. The taxiway has also been widened to 21 m with 3 m shoulders on both sides.

The old USAF runway lighting system was replaced and a Visual Approach Slope Indicator System (VASIS) was installed. The VASIS is not operational yet; some problems have occurred with the angle of descent. The problems will be corrected during the summer of 1982.

A legal land survey has been conducted and apron floodlights have been installed.

*Cape Dorset:* The installation of a VASIS has been completed, although the system is not operational pending flight checks, which will be carried out during the summer of 1982.

*Clyde River:* A VASIS was installed in 1981 but did not become operational until lamps were delivered in the spring of 1982.

Problems were encountered with the contract for constructing the maintenance garage. These problems have delayed completion of this project to the summer of 1982.

*Frobisher Bay:* The major components of the ILS (localizer and glide path) were replaced during 1981.

*Lake Harbour:* A runway lighting system was installed during the year, although the project was not included in the original program for the airport. A legal land survey has been conducted and apron floodlights have been installed.

*Pangnirtung:* A new runway lighting system has been installed together with a VASIS. Although the lighting system is now operational, the VASIS will not be operational before the summer of 1982, pending a flight check.

*Pond Inlet:* The installation of a VASIS was completed during last summer but the system will not be operational until the lamps are delivered. Amendments to the legal land survey of last year were carried out in 1981.

*Sanikiluaq:* VASIS installation is progressing and will be completed in 1982-83.

**Plans for 1982-83**

*Broughton Island:* An airport emergency vehicle will be provided in 1982-83.

*Cape Dorset:* An airport emergency vehicle is scheduled to be delivered in the summer of 1982. A project to relocate and replace the NDB will start in 1982-83, but will involve only the civil works as electronic equipment will not be available before 1983-84.

*Clyde River:* The installation of apron floodlights is planned for summer, 1982, as are repairs to the maintenance garage.

*Frobisher Bay:* The following items in addition to minor projects, are scheduled for the coming year: the replacement of water and septic tanks; replacement of UHF and VHF transmitters; consolidation of the HF receiver site at the VHF transmitter site; and the rehabilitation of the VHF transmitter site.

*Pangnirtung:* An airport emergency vehicle is scheduled for summer, 1982, as is the civil work for the rehabilitation of the NDB.

*Pond Inlet:* For the summer of 1982, an airport emergency vehicle will be delivered and floodlights are scheduled to be installed.

*Sanikiluaq:* A legal land survey will be carried out during 1982. Delivery of an airport emergency vehicle and the installation of apron floodlights are also scheduled. The VASIS installation should be completed by the end of the summer.

*Central Region*

One Arctic A airport (Resolute Bay) and 14 Arctic B and C sites are located within Central region.

Community airport radio stations staffed by observer/communicators have been established at the following sites: Chesterfield Inlet, Eskimo Point, Whale Cove, Repulse Bay, Igloolik, Grise Fiord, Spence Bay, Pelly Bay and Gjoa Haven.

A status report on construction at these sites during 1981-82 follows:

**Review of 1981-82**

*Baker Lake:* The apron expansion project was completed and the gravel base for the meteorological instruments was laid.

*Coral Harbour:* High intensity runway approach lighting and illuminated wind socks were installed. The VASIS was relocated from the east to west side of Runway 15. A field electrical centre building was constructed and an electrical regulator relocated.

*Gjoa Haven:* Construction of a new runway began during the year and is now partially completed.

*Grise Fiord:* An NDB was installed at this airport during 1981.

*Hall Beach:* A new maintenance garage was constructed at this site in 1981.

*Igloolik:* During the year, work on runway construction was completed at Igloolik.

*Rankin Inlet:* Crushed gravel was placed on the runway and work on the VHF/DF and the VOR/DME completed. The equipment was commissioned in February 1982.

*Repulse Bay:* Equipment repairs were completed with the intention of resuming runway construction in 1982. Materials for the passenger shelter were brought on site in preparation for an early construction start in the spring.

*Spence Bay:* Runway lighting and VASIS were installed and work on the passenger building started during the year.

*Whale Cove:* Runway lighting was installed.

***Plans for 1982-83***

***Baker Lake:*** Starting in 1982-83, a combined terminal/operations building will be constructed, and a power line from the town to the airport will be installed. Water and sewage facility improvements also are planned.

*Gjoa Haven:* Runway construction started in 1981, will be completed during the next year.

*Hall Beach:* The runway will be widened and construction will begin on the new passenger/cargo shelter.

*Igloolik:* It is expected that VASIS will be installed during 1982.

*Repulse Bay:* A passenger/cargo shelter will be constructed and work will continue on runway construction and improvements.

*Spence Bay:* A passenger/cargo shelter will be constructed and screened material will be placed on the runway extension.

*Whale Cove:* A new field electrical centre will be constructed and a VASIS is scheduled for installation.

*Western Region*

In the Western Region there are 9 Arctic A airports (Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Yellowknife, Watson Lake and Whitehorse) and 30 Arctic B and C airports.

The region has continued its program of converting appropriate flight service stations to community airport radio stations, staffed by observer/communicators. Nine airports are now staffed and operational: Faro and Old Crow in Yukon Territory, and Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman, Wrigley and Sachs Harbour in the Northwest Territories. It is planned that Teslin will be converted in the fall of 1982.

In addition to specific airport construction projects, planning is under way to develop the air transportation infrastructure needed to provide service to resource development areas in the Western Arctic and Yukon. Either feasibility studies or project definition work are under way for Beaufort Sea developments at Tuktoyaktuk and for mining operations at Faro. Also, the effect of northern pipelines on airports along the Alaska Highway and at Norman Wells on the Majckenzie Highway is being assessed. As resource development continues in these areas, airport facilities may be expanded using resources other than those provided under the Arctic Airports Facilities Policy.

A status report on construction at Western region Arctic sites in 1981-82 follows:

***Review of 1981-82***

*Aklavik:* Airport development work is 90 per cent completed. Some surface gravel work is required on the apron and taxiway. All other facilities are in place.

*Coppermine:* A safety fence separating airside and groundside activities was installed.

*Fort Good Hope:* Brush clearing around the VOR site was completed during the year.

*Fort Liard:* Brush clearing to satisfy zoning requirements is nearing completion.

*Fort McPherson:* During the summer of 1981, clean-up of the shale borrow pit was completed.

*Fort Norman:* Development of the runway, taxiway and apron continued over the year. Installation of visual aids is now 70 per cent completed. An airport access road was completed and the power supply installed in 1981.

*Rae Lakes:* Equipment for recording wind speed and direction was installed during 1981-82.

*Sachs Harbour:* Airport development work is now completed and visual aids, equipment for dispensing fuel and a safety fence have been installed.

*Tuktoyaktuk:* A safety fence was installed and the NDB was relocated to a site on the airport.

*Burwash:* Installation of taxiway and apron lights has been completed.

*Faro:* A feasibility study on airport expansion was continued.

*Mayo:* VASIS, lighted windsocks, and a rotating beacon were installed in 1981.

*Old Crow:* Brush clearing work to meet zoning requirements was started.

*Ross River:* Airport development began in 1981-82. The runway, taxiway, apron and graded areas are approximately 95 per cent completed; the passenger/cargo shelter is about 70 per cent finished.

*Hay River:* The overlay for Runway 12/30 was completed during the year and one pick-up truck and one wobbly-wheel packer were purchased.

*Inuvik:* Work continued on the water supply for the air terminal building. Also, an area spreader and a wobbly-wheel packer were purchased.

*Cambridge Bay:* Gravel runway improvements were carried out over the year, as were repairs to the air terminal building. Repairs to the roof of the maintenance garage were also completed.

*Whitehorse:* Conceptual studies on the new air terminal building continued in 1981. More safety fencing was installed and two pick-up trucks, one cargo van, one wobbly-wheel packer, one 1½-ton truck, and a CRV 1000 fire truck were placed in service.

*Watson Lake:* A storage building was assembled at the maintenance garage and site housing was upgraded as part of an annual program.

*Fort Smith:* A garden tractor and a pick-up truck were purchased.

*Norman Wells:* A wobbly-wheel packer and a Mark 10 fire truck were supplied. Areas were developed for storing equipment and materials and for carrying out fire training.

***Plans for 1982-83***
During 1982-83, facilities for the handicapped will be developed and upgraded at all sites listed below in accordance with the Department's Policy for the Provision of Handicapped Facilities.

*Cambridge Bay:* Surface improvements to Runway 1331 are planned, and it is expected that official zoning regulations will be promulgated for the airport in 1982.

*Fort Simpson:* Plans call for the replacement of a runway sweeper and the installation of ILS/RVR/NDB for Runway 30.

*Fort Smith:* Removal and replacement of asbestos insulation in the maintenance garage is scheduled, as is the overlay of Runway 11/29, including the apron and taxiway, and recabling of the airfield lighting system. DVOR/DME and related equipment will be installed.

*Hay River:* The air terminal building and maintenance garage will receive an energy retrofit in 1982 and the VOR will be converted to DVOR. Further work includes upgrading the flight check facility and reworking runway approaches.

*Inuvik:* Roof repairs for the air terminal building, maintenance garage, powerhouse and rawinsonde building will be carried out this year. Alterations to the facility for emergency services administration are planned.

*Norman Wells:* Plans call for the removal of asbestos from the maintenance garage and repairs to the aircraft parking apron.

*Watson Lake:* A new powerhouse distribution centre and IPU will be installed, and official zoning regulations will be promulgated for the airport.

*Whitehorse:* The preliminary design for the new air terminal building is expected to be approved during 1982-83. The maintenance garage and firehall energy retrofit programs will be carried out.

*Yellowknife:* Plans call for the overlay paving of Runway 15/33, taxiway "A", and aprons 1 and 2. Also planned is an upgrading of the maintenance garage; the construction of a temporary pre-boarding security screening facility and an energy retrofit of the terminal building. Finally, it is planned to pave part of the air terminal access road.

**Canadian Surface Transportation Administration**

*Surface Policy, Planning and Urban Programs Branch*

***Responsibilities***
The Branch manages the Urban Transportation Assistance Program (UTAP), which shares the cost of studies and capital works designed to make urban transportation systems more efficient.

***Review 1981-82***
During 1981-82, a new bus was acquired for Whitehorse.

*Water Transportation Assistance Directorate*
The Water Transportation Assistance Directorate subsidizes essential water transport services for which all costs cannot be covered by rates charged to users.

***Review 1981-82***
The Directorate's main Arctic activity is the subsidization of the Northern Transportation Company Limited (NTCL) barge services from Churchill to the Keewatin ports. In 1981-82, this subsidy amounted to $650 000.

**Canadian Marine Transporation Administration**

***Responsibilities***
The Canadian Marine Transportation Administration (CMTA) works to make the national marine transportation system both efficient and safe. The administration is composed of the Canadian Coast Guard, the National Harbours Board, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities. In the Arctic, the administration provides facilities and services for commercial and re-supply shipping.

## *Canadian Coast Guard*

### ***Responsibilities***

The Canadian Coast Guard (CCG) co-ordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF) and Canadian commercial interests. It also provides ice and route information and icebreaker services. The Directorate carries out environmental research and surveys, installs, operates and maintains marine navigation aids and a network of Coast Guard radio stations and carries out search and rescue operations. Finally, the Directorate administers the Navigable Waters Protection Act (NWPA) and Arctic Waters Pollution Prevent Act (AWPPA).

### ***Review 1981-82***

The Canadian Coast Guard co-ordinated and conducted the annual re-supply operations in the eastern Arctic. It assisted in the delivery of fuel, equipment and other commodities by ship to isolated bases, communities and Distant Early Warning (Dewline) Sites. It also provides ice routing and icebreaker escort to commercial shipping, particuarly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point, Little Cornwallis Island, Eureka and at sites in Foxe Basin.

Eastern Arctic sealift operations used the services of three commercial carriers operating a total of 10 vessels. Delivery was made to 44 sites, including civil settlements, Dewline Sites in Canada and Greenland, and scientific stations. A total of 11 613 tonnes of dry cargo and 33 313 tons of petroleum, oil and lubricants in bulk was delivered. There was a literal movement of five tonnes of cargo within the Arctic, and 151 tonnes were shipped south to Montréal and Ogdensburg, N.Y.

Personnel from the Arctic Sealift section also assumed port warden duties at Nanisivik and monitored the loading of a total of 131 482 tonnes of lead and zinc ore.

The NORDREG/ECAREG VTM systems and the Frobisher Bay ice office monitored operations and kept track of shipping movements, provided ice information and ice route services and deployed icebreakers where required.

During the season, a total of 99 vessels, including Coast Guard ships, entered the Arctic Canada traffic zone. Five vessels sustained damage, three were defective, and one lacked the necessary navigation charts and publications. During the 1981 season, no land or sea-based pollution incidents were reported to the NORDREG centre.

The Coast Guard monitored Beaufort Sea drilling operations in co-operation with the Department of Indian and Northern Affairs to determine the extent to which vessels were operating with due regard to safety, and to prevent pollution by ships.

Plans for carrying out the recommendations of the study "Maritime Mobile Communications in the Canadian Arctic", referred to in the previous GAIN report, are underway. Three regions (Newfoundland, Laurentian and Western) are responsible for designing the communication system and estimating its cost. Headquarters is responsible for obtaining funding. The intention is to install communications equipment and facilities at 17 locations in the Arctic.

Ten Canadian Coast Guard icebreakers were deployed in the 1981 northern re-supply operations. The vessels provided icebreaking services for commercial shipping and carried out special projects on behalf of industry and government departments. Most of these projects involved hydrographic, oceanographic and scientific surveys for the Defense Research Establishment Pacific, Department of Fisheries and Oceans and Environment Canada.

On June 28, CCGS John A. Macdonald sailed from Dartmouth, N.S., and proceeded to Lancaster Sound to provide assistance to ships bound for and departing from Nanisivik. Later, the Macdonald was involved in hydrographic work until the barge Arvik II arrived. The Macdonald then escorted the tugs and a factory barge to the Polaris mine site on Little Cornwallis Island. Next, the ship continued with a hydrographic and scientific program for the Defense Research Establishment Pacific.

On July 1, CCGS Sir John Franklin sailed from St. John's, Nfld., to the entrance of Hudson Strait to provide icebreaker assistance to shipping. At the beginning of August, the Franklin was deployed to Cape Hatt to assist in an experimental subsidiary project of AMOP known as the "Baffin Island Oil Spill" project (BIOS). This $5 million program was funded by contributions from DOE, DINA, EMR, USCG, the Canadian Petroleum Industry and the Norwegian Government. The Franklin supported BIOS by transporting to Cape Hatt some $300 000 worth of equipment to counteract oil spills. The Canadian Coast Guard also contributed to the BIOS project by providing a team of five Coast Guard emergency employees to manage the two experimental spills.

In Mid-August, the Sir John Franklin was diverted from Cape Hatt to assist commercial shipping in the western section of Lancaster Sound and Barrow Strait. At the same time, the Franklin undertook a brief hydrographic survey of Penny Strait. During the first week of September, the Franklin returned to the BIOS site at Cape Hatt and loaded most of the oil pollution equipment it had delivered earlier.

On July 7, CCGS Pierre Radisson sailed from Québec City and proceeded to Hudson Strait to reactivate the aids to navigation and to provide icebreaker assistance to early commercial shipping arrivals. In mid-August, the Radisson was deployed along the east coast of Baffin Island to the High Arctic to assist shipping there. Once in the Lancaster Sound area, the Radisson escorted commercial shipping up to the Eureka weather station for the annual re-supply. The Radisson then ventured further northward to Tanquary Fiord (position: 812N 7656W) to undertake a short hydrographic survey of the area. Twelve tonnes of cargo, including snowmobiles and 518 drums of fuel were unloaded from the icebreaker to the camp for the "Transglobe Expedition". When this phase of the Radisson's mission was finished, the ship returned to Lancaster Sound in early September to continue work on the Breadalbane project. When this work had been completed, the Radisson spent until late September escorting commercial shipping to and from Little Cornwallis Island and other ports of call in the Lancaster Sound area.

On July 7, CCGS Camsell sailed from Victoria, B.C., via Unimak Pass around Alaska to the western Arctic. Once stationed off Tuktoyaktuk, the Camsell activated the required navigational aids and provided icebreaker assistance to commercial shipping in the annual re-supply activities of the Beaufort Sea, Amundsen Gulf, Coronation Gulf, and Queen Maud Gulf. The Camsell returned to Victoria B.C. October 4, after deactivating the aids to navigation in the western Arctic.

On July 24, CCGS Sir Willaim Alexander sailed from Darthmouth, N.S., to the western side of Hudson Bay. While en route, the Alexander carried out oceanographic sampling at various positions. Once in the Chesterfield Inlet area, the Alexander carried out a detailed hydrographic survey from its sounding launch. In early September, the ship made a short journey to Churchill, Manitoba to change crews and to place current meters in selected locations throughout Hudson Bay. On September 24, the Alexander completed the survey.

On July 20, CCGS Norman McLeod Rogers sailed from Hudson Strait. The Rogers, while en route, stopped briefly at Saglek and Killinek to unload cargo before arriving at Frobisher Bay. The ship was involved in laying the summer navigational buoys in this area and in activating the navigation aids. Mid-August, the Rogers was deployed to assist shipping in Foxe Basin.

On an as required basis, the Rogers also assisted the J.E. Bernier with the navigational aids construction program. By early September, the Rogers returned to Killinek and loaded some equipment before sailing south.

On July 27, CCGS J.E. Bernier sailed from Québec City en route to Ungava Bay, Hudson Bay and Foxe Basin via Hudson Strait on a navigational aids construction program. On October 7, this program was completed.

On August 12, CCGS d'Iberville sailed from Québec City bound for Lancaster Sound. While en route, the ship was diverted to provide icebreaker assistance to a commercial tanker engaged in the annual re-supply for Grise Fiord and Eureka. Upon completion of this operation, the d'Iberville proceeded to Nanisivik for refuelling and to assist shipping as required. During the last week of September, the d'Iberville arrived at Frobisher Bay, where the ship was used for lifting the summer navigational buoys and loading two landing craft barges.

On August 24, CCGS Labrador sailed from Darthmouth, N.S., for Hudson Strait. The Labrador worked with CGS Bassin to carry out a detailed hydrographic survey of Foxe Basin and the eastern entrance of Fury and Hecla Strait. By the second week of October, the Labrador was deployed to the Deception Bay area to stand by for shipping.

Before being released from Arctic operations in late October, the Labrador embarked the personnel from Killinek Radio Station and personnel and equipment from Port Burwell.

On July 16, CCGS Louis S. St. Laurent sailed from Dartmouth en route to Nachvak Fiord to conduct a hydrographic survey of the northern Labrador coast. While in the area of Martin Bay, near Cape Chidley, Labrador, the Louis S. St. Laurent located and retrieved the remains of a second World War German weather station, which was established in 1943 by the German submarine U-537. After the St. Laurent's historic sidetrip, the ship sailed further north to Breevort Harbour to continue the hydrographic program. By mid-August, the St. Laurent was released from these duties to escort shipping in the Lancaster Sound area. Thereafter, the St. Laurent escorted ships from Little Cornwallis Island to Nanisivik and to Pond Inlet. Late in the navigational season (mid-November), the ship was assigned to assist as required, the MV Arctic which was undergoing ice trials in the eastern approaches to Lancaster Sound.

### *National Harbours Board*

The National Harbours Board leases facilities to NTCL for its barge re-supply operations to communities on the west coast of Hudson Bay. The Board also provides facilities and services for loading grain for commercial shipments overseas.

In the previous two years, weather conditions allowed the Port of Churchill to load grain aboard the MV Arctic until November. However, shipping operations in 1981 were restricted to the normal season.

### *Ports and Harbours Directorate*

CMTA administers certain public port facilities north of 60°, particularly along the Mackenzie River system and in small coastal communities from Amundsen Gulf to Ross Strait in the western Arctic. These facilities are in addition to those provided by the private sector. Facilities in the western Arctic, particularly along the Mackenzie River system are generally suited to shallow draft barge traffic. There were no major changes to these port facilities in 1981, and none are planned for 1982.

In the eastern Arctic, there are two public harbours: Nanisivik in Strathcona Sound on Northwestern Baffin Island, and Frobisher Bay in the southern part of Baffin Island. Last year was the third full operating season for the Nanisivik facility, which consists of three large-diameter steel sheet pile cells with concrete caps and gravel cargo-working areas. Nanisivik Mines Ltd. provided a shiploader and conveyor system for loading mineral products. The facility can be used by vessels of up to about 50 000 tonnes deadweight.

Frobisher has anchorage berths in Koojesse Inlet. This anchorage is subjected to strong tidal runs and is dangerously exposed to north and south winds. In the event of a storm warning, vessels must be prepared for a quick departure. Because the facility has no pier, ships must unload and load all general cargo by means of landing craft that shuttle between ship and shore.

### *Research and Development*

The Canadian Marine Transportation Administration carries out systematic Research and Development (R&D) in transportation and its related technologies.

Marine R&D is directed to increasing the safety and efficiency of marine transportation and to determining technically feasible alternatives to help meet particular program objectives.

The marine R&D program involves activities with other governments, industry and universities and other departments and agencies within the federal government. It focuses on areas of marine technology that are critical to enabling the Administration to fulfil its mandate. Specifically, R&D concentrates on technology related to:

- vessels (standards and regulations);
- navigation and communications systems;
- emergencies, salvage, and search and rescue;
- pollution prevention and cleanup; and
- marine terminals.

The issues of sovereignty and safety added a new focus to the types of R&D carried out in 1981-82. The major new R&D event in 1981-82 was Cabinet's approval of a $14 million, three-year Arctic Marine R&D program to be co-ordinated by CMTA. The objective of this program is to carry out a range of mission-oriented R&D projects that will lead to safe and efficient year-round navigation in the North. This is a necessary adjunct to both the development of Arctic resources and the realization of attendant industrial benefits.

In 1981-82, CMTA co-operated with the United States to encourage R&D in marine transportation. For example, Canada and the United States exchanged information on navigation in ice and on vessel vibration and stress.

The MV Arctic is Canada's only "ice-strengthened" bulk carrier. Ice trials of this ship have been accelerated and have yielded valuable information on factors affecting vessels operating under Arctic conditions.

Additional probes into heavy ice by the Canadian icebreakers Franklin and Radisson also have provided valuable data. Much of this information will be used to develop standards and regulations for building Arctic class vessels. It will also be used in arriving at specifications for a new "world-class" Arctic class 8 icebreaker for the Canadian Coast Guard. Cabinet approved the undertaking of design studies for this ship in 1978.

CMTA has also initiated a wide range of projects in co-operation with the marine transportation and shipbuilding industries. While many projects are more relevant to ships and shipping south of 60°, a number of them have universal application.

The Marine Advisory Board is CMTA's primary link with the shipping industry. The Board provides direct feedback on the main concerns of industry in the Arctic and elsewhere. Under the Board's auspices, CMTA has undertaken significant new R&D activities directed to finding methods to detect ice hazards and to develop remote ice sensor systems. Other work has included research into ship ballasting in varying ice conditions, hull corrosion, systems for reducing friction, and new technologies for paving terminals and controlling ice in harbours.

### *Transportation Research & Development*

**_Responsibilities_**

The Research & Development Directorate of the Department's Planning Group is responsible for interdepartmental policy consultation, and for co-ordinating and planning transportation-related Research and Development in the federal government. The Directorate also has operating responsibility through the Transportation Development Centre (TDC) in Montreal, which caries out R&D projects to serve the needs of the three operating administrations. It also conducts long-range, national R&D projects. Further, through its Energy R&D Program, the Directorate funds energy-related transportation R&D projects.

**_Review 1981-82_**

In June 1981, Cabinet approved funds amounting to $14 million over three years (1981-82 to 1983-84) for Arctic marine transportation R&D. These funds are co-ordinated and managed by the Department of Transport's Canadian Marine Transportation Administration.

The Centre's Arctic-related R&D in 1981-82 funded through this program was directed toward improving the design and operation of icebreakers. For example, TDC carried out R&D on design of propellers, propeller shafts and related equipment, which are affected by the interaction of propellers with ice.

TDC continued the ice performance evaluation program for the icebreaking bulk cargo vessel, MV Arctic, and completed the data collection phase in 1981-82. The detailed data analysis phase is now beginning. The study into steel properties and special steels for Arctic class ships also continued in 1981-82.

TDC continued to research the problem of navigation in ice concurrently with the advances it encourages in Arctic vessel construction standards. The need to avoid or at least minimize major ice-ship confrontation continues to have high priority among ship operators, and therefore warrants much R&D effort. In this connection, TDC is conducting two projects-remote Sea Ice Thickness Sensor Development and Ice Hazard Detection — which concern the use of sonar sensors and other electronic sensing devices as solutions to this problem. TDC is also extensively involved in the enhancement of icebreaker capability through theoretical studies and actual field tests of the dynamic rupture or breaking of ice by air cushion vehicles.

As noted earlier, most of the Centre's R&D efforts for the North are concerned with Arctic vessel research. However, this year, TDC continued the Arctic Snowmobile Technical Study. The objective is to develop a more efficient, reliable snowmobile, specifically for the Arctic.

A new project started this year was a study of truck movements over ice sheets. The objective was to make truck transportation more safe over ice sheet roads. These roads are used during the winter months to cross frozen rivers and lakes in the North. Other new projects include studies on ways to reduce the cost of operating and maintaining Arctic ports and harbours.

The major projects funded under the energy R&D program in 1981-82 concerned Arctic vessel requirements. Projects included testing the structural steel used in the hulls of Arctic class vessels, work on Arctic navigation systems, including the development of ice detection and collision avoidance sensors, and Arctic ways information including ice forecasting and hydrographic studies.

Environmental studies were started relating to the Atlantic "near-offshore" area. Exploratory R&D work on the regulations that might be necessary for offshore drilling vessels was also carried out.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 85 525 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Economic Growth | 59 669 | 69.7 |
| Quality of Life | 25 616 | 30.0 |
| Administration and Support | 240 | 0.3 |

# Veterans' Affairs Canada

***Responsibilities***

Veterans' Services of the Department of Veterans' Affairs provides health and social services, financial assistance and counselling to eligible veterans and their dependents. The Department also provides services to certain civilians whose work was closely related to that of the Armed Forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of clients. Instead, counsellors visit the Yukon from the Prince George District Office; the Northwest Territories are served from the Edmonton District Office.

The Veterans' Land Administration works through the Veterans' Land Act to provide financial help to veterans and their heirs, or representatives to acquire title to properties on which they hold an agreement for sale.

The Canadian Pension Commission ensures that benefits available under the Veterans' Pension Legislation are extended to all eligible veterans and their dependents. Services include counselling, help in applying for benefits available under the pension legislation, and medical examinations for assessing eligibility for benefits. The Vancouver and Edmonton District Offices provide the Yukon and the Northwest Territories with the same services as those available elsewhere in Canada.

Pension applicants in the Yukon and the District of Mackenzie, Northwest Territories obtain free legal assistance from the Bureau of Pensions Advocates through the District Office in Edmonton. Veterans in other parts of the Northwest Territories are served through the Winnipeg District Office. Applicants in the Yukon or the Northwest Territories may, however, deal with any district office.

If an appeal is heard by an Entitlement Board, the Canadian Pension Commission will provide travel expenses of the applicant and his witnesses to the place of hearing.

***Review 1981-82***

At March 31, 1982, 37 veterans or their families in the N.W.T. were receiving pensions for disability or death. In the Yukon, 73 recipients had been awarded similar pensions. In the Northwest Territories, there were eight recipients of either War Veterans Allowances or Civilian War Allowances, and 46 such recipients in the Yukon.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 476 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 476 | 100.0 |

# Government of the Northwest Territories

**Responsibilities**

The Northwest Territories Government has jurisdiction within the Northwest Territories, but does not control natural resources (except game which is a territorial resource).

**Legislative Assembly of the N.W.T.**

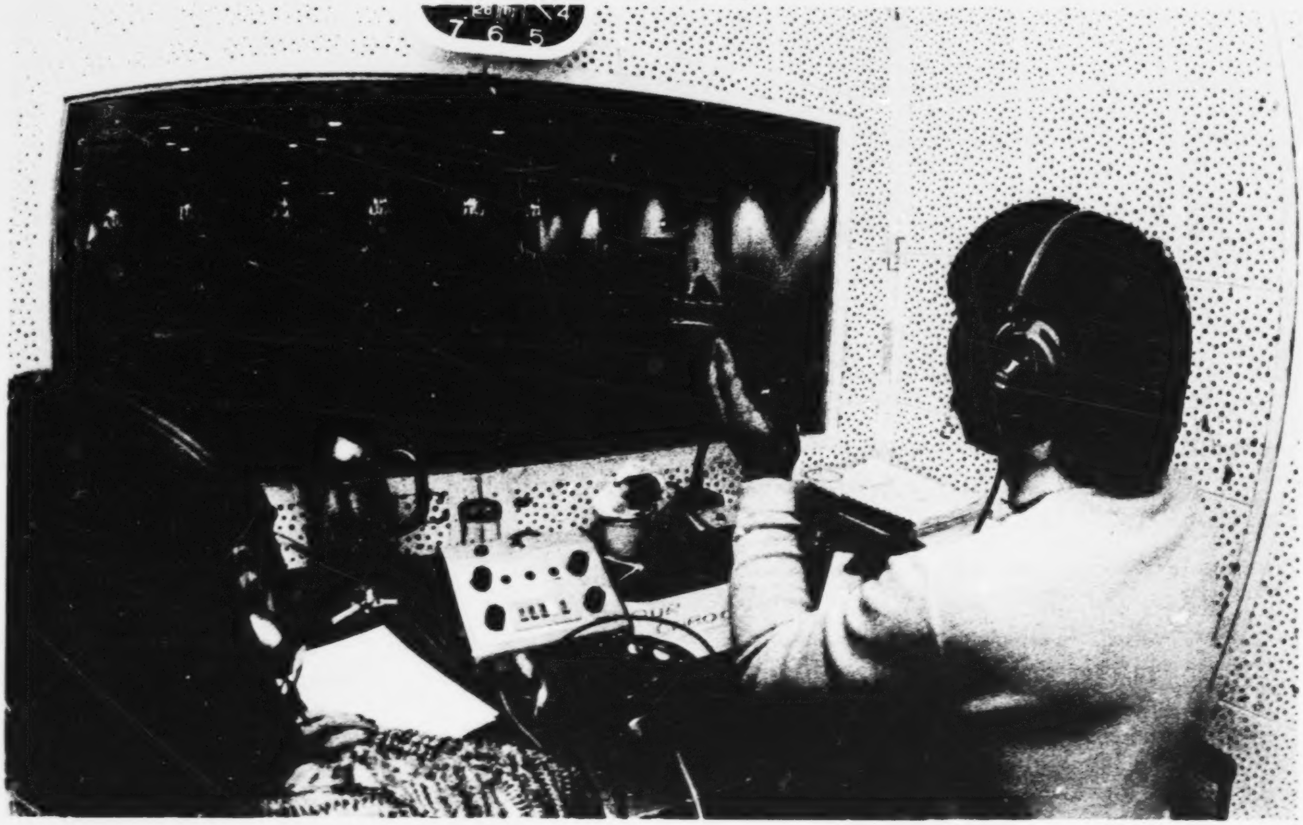
The second full year of the Ninth Legislative Assembly's term was a productive one. In January 1981, Hon. Tom Butters became the first Minister of Finance for the Northwest Territories. Hon. Kane Tologanak became Minister of Government Services and Hon. Dennis Patterson became Minister of Education. With these new members, the Executive Committee has its full complement of seven elected ministers.

*Fourth Session of the Ninth Assembly*

The budget session of the Ninth Assembly opened in Yellowknife on February 4th 1981 and adjourned on March 13th.

In his opening address, Commissioner Parker commended the ministers and all members of the Assembly for their hard work in ensuring that the voices of the people of the North had been heard during the constitutional debate. He particularly noted that the federal government had recognized aboriginal rights and the right of territorial ministers and native leaders to take part in first ministers' conferences on matters affecting them.

Interpreter Corps translating simultaneously for the Legislative Assembly.



Commissioner Parker also said that the Territorial Government would be developing a strategy for energy self-sufficiency, a strategy that would give the North access to secure energy supplies at stable prices. He said the ministers would continue to press the federal government to consider providing a direct share of revenues from the resource development in the North.

*Legislation*

The Assembly passed all 16 bills introduced at this session.

The following new financial ordinances were enacted:

- Appropriation Ordinance 1981-82: to provide $374 276 000 to cover the expenses of the public service of the Northwest Territories for the 12 months ending March 31, 1982.

- Supplementary Appropriation Ordinance, No. 3, 1980-81: to provide $7 159 200 to cover additional expenditures for the public service for the financial year.

- Financial Agreement Ordinance 1981: to authorize the Commissioner to enter into an agreement with the Government of Canada providing for the payment of operating and capital grants to the Government of the Northwest Territories.

- Loan Authorization Ordinance Number 1, 1981-82: to authorize the Commissioner to borrow funds for the purpose of making loans to municipalities and to persons.

- N.W.T. Housing Corporation Loan Ordinance 1980: to authorize the borrowing of funds by the N.W.T. Housing Corporation for the construction or acquisition of public housing projects.

Among the amending ordinances enacted were:

- Boilers and Pressure Vessels Ordinance; Electrical Protection Ordinance; Fire Prevention Ordinance: to allow the Commissioner to adopt certain codes or standards by regulation.

- Justice of the Peace Ordinance: to enable the Commissioner to appoint Juvenile Court judges and to enable the Commissioner to make regulations establishing a Justice of the Peace advisory council.

- Liquor Ordinance: to provide for increased penalties for people unlawfully supplying liquor, and to provide immunity to peace officers or designated persons who breach the Ordinance for purposes of obtaining evidence.

- Lotteries Ordinance: to allow the Commissioner to regulate and licence persons or organizations conducting and managing lottery schemes as permitted pursuant to the Criminal Code of Canada.

- Income Tax Ordinance: to ensure that the tax base on which income tax for the Territories is computed is not eroded.

- Council Ordinance: to provide for revised constituency allowances and revised salaries for House officials, including a second Deputy Chairman of committees of the whole and to provide for payment of certain specified expenses of the Speaker of the House.

Mr. Butters, as Minister of Finance, presented his first budget speech to the House. He emphasized the need for constant, responsible fiscal restraint. He noted, however, that funding would be increased in three priority areas: political and constitutional development; renewableresources; and, economic development.

He said the federal government will offset the extraordinary costs of energy incurred by the government and would receive a special funding submission in the political, resource and economic development areas.

Mr. Butters also mentioned a proposed formula-based funding arrangement that will be presented to the federal Cabinet. The arrangement would provide the Territorial Government with a reasonable, predictable level of funding early in the budget process.

The Minister indicated that three areas would receive priority for next year's budget: development of a three-year forecast of the basic program costs of all departments to plan for negotiations with the federal government; refinement of the accountability-base budgeting system; and, a substantiation process for negotiations with the federal government.

The standing committee on finance presented a report entitled *Responding to Non-renewable Resource Development*. This report was discussed in committee of the whole which recommended that certain areas in the N.W.T. be designated as "developing Zones, and that a policy be established to cover them.

The special committee on education, which was established to consider all aspects of education in the N.W.T., gave its recommendations on student aid to the assembly in February 1981. These recommendations prompted a three-day debate. One of the recommendations which resulted from the debate was that all students be awarded a basic N.W.T. student grant. The grant would cover transportation, tuition, books and supplies. The present student aid program will remain in effect while the new grant proposal is being studied.

A motion outlining a detailed response to the federal government's Bill C-48, regulating oil and gas in "Canada Lands" involved a two-day discussion in committee of the whole. The motion suggested that the N.W.T. Government and native organizations form a coalition to make an effective presentation on the Bill to the federal government. It was stated that the Bill should in no way encroach on aboriginal title until land claims have been resolved, and that residents of the Northwest Territories must benefit from exploration and resource development. The motion called for consultation between the N.W.T. Government and the federal government because of the socio-economic implications of massive development of the Territories.

*Fifth Session of the Ninth Assembly*
On May 14, 1981, the Legislative Assembly convened in Hay River for the fifth session of the Ninth Assembly. The session adjourned until the next session on May 27, after 10 sitting days.

In his opening address, Commissioner Parker said that northerners are facing great pressures in the areas of resource development and constitutional and political change.

Mr. Parker pointed out that financial restraints were limiting the government's ability to respond to the social and economic effects of new resource development projects. He said that the Territorial Government was studying a new proposal on resource revenue sharing that would complement the proposed arrangement for formula-based financing. This proposed financing arrangement is expected to replace the current method of financial negotiations with the federal government.

All eight bills introduced at this session were passed.

New ordinances enacted were:

- Extra-Territorial Custody Orders Enforcement Ordinance: to allow territorial courts to enforce custody orders of courts of other jurisdictions.

- Home Owners' Property Tax Rebate Ordinance: to provide for rebates of property taxes to home owners in the N.W.T.

- Supplementary Appropriation Ordinance, No. 4, 1980-81: to provide an additional $1,023,300 for the public service for the 1980-81 financial year.

Among the amending ordinances enacted were:

- Maintenance Orders Enforcement Ordinances: to provide for a continuing method of enforcing payment under maintenance orders.

- Co-operative Associations Ordinance: to provide for the registration in our jurisdiction of co-operative associations incorporated in other jurisdictions and for the amalgamation of associations.

- Public Trustee Ordinance: to increase from $2 000 to $5 000 the value of an estate that can be distributed without probate.

The Hon. George Braden presented the government's response to the task force on employee housing. He said that the government's policy would be to move away from providing accommodation for government staff and to encourage the growth of a private housing market.

There would be equal housing benefits for all government employees and government-owned houses would be made available for sale.

Tom Butters, the Minister of Economic Development and Tourism said that federal, territorial and provincial legislation and regulations covering uranium exploration and mining will be reviewed to determine what additional legislation and regulations are neded to ensure human safety and environmental protection in the N.W.T.

The Minister noted that the government had prepared a position paper responding to the Lancaster Sound Green Paper.

By adoption of motions, the Assembly recommended that a plebiscite be held to determine whether or not the people of the N.W.T. favour the creation of a Nunavut Territory.

The Standing Committee on Finance presented its 10th report. The Committee's spending priorities for 1982-83 were: constitutional development; economic development, particularly responding to resource develpment; education, especially in the area of adult education and training; development of a language policy; recreation facilities for communities; and, the ongoing priority on employment of northern residents, northern purchase and northern business opportunities.

*Sixth Session of the Ninth Assembly*
On November 12, 1981, the Ninth Legislative Assembly convened in Yellowknife for its sixth session.

Immediately after the Commissioner's Address, the Assembly set aside all other business and met in committee of the whole to consider matters relating to the Federal Constitution.

At the conclusion of a three-day emergency debate, three motions were adopted:

- The first motion supported the reinstatement of aboriginal rights of the native people of the N.W.T. in the proposed Constitution. It also sought deletion of provisions relating to provincial involvement in the extension of existing provinces into the Territories and the establishment of new provinces.
- The second motion was to establish a Special Committee on the Constitution of Canada, consisting of all members of the Assembly.
- The third motion suspended this session to permit the Special Committee to travel to Ottawa to pursue the Assembly's objectives.

On November 15, the entire membership of the Legislative Assembly, together with support staff, travelled to Ottawa. They met in the Capital with government and opposition M.P.'s, Cabinet members, Senators and senior public servants to explain the position of the Assembly on constitutional matters.

On November 20, the Special Committee met with the Prime Minister.

The Assembly's extensive lobbying played a major role in the decision of the federal government, with the consent of nine premiers, to reinstate aboriginal rights provisions in the constitution resolution as finally adopted.

The sixth session resumed in Yellowknife on the twenty-seventh of November and continued until the fourth of December.

After hearing a report on the Ottawa visit, the Assembly adopted an action plan to continue pressure for constitutional change including: possible legal action, possible provincehood for the N.W.T. and further discussion with the provincial premiers. The Assembly was particularly concerned that provincial involvement in creating new provinces and extending provincial boundaries would remain in the new Constitution Act.

Several reports were considered at this session. The Assembly endorsed the interim report of the Special Committee on Education. The report of the Special Committee on Impact was accepted as valuable information in preparation for a plebiscite on the division of the Territories. The Assembly approved a recommendation of the Standing Committee on Finance for a two-year pilot project to assist Pelly Bay with a freight subsidy on specific food items and to further study freight subsidies in the Northwest Territories.

There were 19 bills passed at this session; most were administrative. Of major significance was the plebiscite ordinance which set up the mechanism for holding plebiscites in the N.W.T., particularly one on division of the Northwest Territories.

### *Standing and Special Committees*

The Standing Committee on Finance was active and held meetings between and during sessions. The Committee hired a consultant to assist with the report "Responding to Non-renewable Resource Development". The Committee also travelled to Tuktoyaktuk to see the problems facing a community affected by this kind of development.

The Committee also undertook a review of the cost-of-living in the Northwest Territories, in response to debate and presentations made at Assembly sessions in 1980-1981.

The Committee performed its usual function of reviewing the financial forecasts and main and supplementary Estimates before presentation to the Assembly.

As a result of much debate in the House on the possibility of separation, a Special Committee on Constitutional development was formed to determine the views of the western Territories.

The Special Committee on Education held 32 public hearings on education throughout the Territories. It is scheduled to present its final report at the 1982 spring session.

The Special Committee on Impact was formed as a consequence of the Unity Committee's recommendation passed in Frobisher Bay in November 1980. The Special Committee studied how the division would affect the Northwest Territories if it were split into eastern and western Territories. The Committee engaged a consulting firm to assist in its task. A sub-committee formed from the Special Committee travelled to communities with the consultant and met with residents and officials of native organizations throughout the Territories. The Committee presented its final report at the November 1981 session.

### *Clerk of the Legislative Assembly*

The Office of the Clerk of the Legislative Assembly has two primary functions: it advises the speaker, chairmen of committees of the whole and individual MLA's on parliamentary procedure. It also provides administrative and support services to the Assembly and its standing and special committees. As a result of a large increase in the Office's workload, four new positions — public affairs officer, finance officer, stenographer and receptionist were added.

### Office of the Commissioner

The authority of the Commissioner, as defined by the Northwest Territories Act, remained unchanged throughout 1981. His role, however, is changing, as elected executive members assume more and more departmental and executive functions.

Commissioner John Parker remained directly responsible for the Departments of Information and Personnel. He also continued to chair the Executive Committee and the Financial Management Board.

The Honourable John Munro, Minister of Indian Affairs and Northern Development, travelled four times to the Northwest Territories, including one visit to the Delta and Mackenzie Valley communities. His purpose was to hear the concerns of the people about major resource development projects. In recognition of the important role that it must play in manyaspects of non-renewable resource development, the Territorial Government established an Energy and Resource Development Secretariat. The Secretariat will co-ordinate the government's activities in this area.

Issues surrounding the proposed patriation of the Canadian Constitution, and constitutional and political development within the N.W.T. were among matters that the Executive Committee addressed.

In November, the Commissioner went to Ottawa with the Legislative Assembly's Special Committee on the Constitution for meetings with federal Cabinet Ministers, Members of Parliament and the Prime Minister.

Deputy Commissioner Bob Pilot, the Executive Committee member responsible for the Department of Public Works and for the Regional Operations Secretariat, holds the position of Chairman of the N.W.T. Housing Corporation, the Audit Committee and the Capital Planning Committee.

Mr. Pilot's regional operations responsibilities included the restructuring of N.W.T. regional administration with the creation of the Central Arctic region. This new region provides residents of the coastal communities with a full range of locally administered programs and services. With its headquarters in Cambridge Bay, the region includes the communities of Holman Island, Coppermine, Gjoa Haven, Spence Bay and Pelly, as well as Bay Chimo, Bathurst Inlet and Contwoyto Lake.

Mr. Pilot directed the establishment of a housing implementation group to encourage private home-ownership in the Territories. Steps have been taken to assist private homeowners with the high cost of utilities. The implementation group has also developed procedures for the sale of government-owned accommodation to the public.

Mr. Pilot's involvement in developing both capital and operations and maintenance budgets for the Government of the N.W.T. culminated in his leading the territorial delegation to the inter-governmental committee meetings in Ottawa, where the 1982-83 budget was negotiated with the federal government.

### *Justice and Public Services*

George Braden assumed responsibility of the Justice and Public Services portfolio on January 5th, 1981. His thorough review of the Department's prime roles and functions led to a decision to shift the Department's emphasis toward its justice functions.

In April, the Minister directed that the Department decentralize its activities to the regions. The objective was to enable the Department to respond more easily to the needs of all N.W.T. residents.

At the same time, final negotiations for transferring the administration of the Mining Inspection Services Program from the federal to the Territorial Government were taking place. The transfer became effective on June 1, 1981. The Department is now involved in a major review and revision of the N.W.T. Mining Safety Ordinance and mine safety rules.

One of the Department's more important advancements was to become more involved with territorial/provincial matters. The Minister attended several provincial Attorneys General meetings and presented the views of the Territorial Government on the justice function.

The Department is placing additional emphasis on consumer and commercial affairs. It is also responsible for administering the Police Services Agreement, which provides for the services of the Royal Canadian Mounted Police in the Northwest Territories.

### *Legal Division*

The Legal Division provides legal advice and services to all government departments, boards, the Executive Committee and the N.W.T. Housing Corporation. This Division is also responsible for drafting Territorial regulations and bills for submission to the Legislative Assembly. It also drafts orders and provides legal opinions.

The Division also administers the Criminal Injuries Compensation Program in accordance with the Criminal Injuries Compensation Ordinance; through the Office of the public trustee it also administers estates.

### *Court Services*

Court Services is staffed by one Supreme Court judge, three Territorial Court judges and 29 support staff. One of the Territorial court judges and three support staff are permanently posted in Hay River. All Courts travel on circuit to communities in the Northwest Territories.

There are 102 Justices of the Peace in the various communities; 53 are of native origin. During 1981, the Territorial Courts processed 7 296 criminal cases. Justices of the Peace heard 2 916 (40 per cent) of these cases.

A conference and training seminar for Justices of the Peace was held in Yellowknife in October. Members from all regions attended. In addition to the annual meeting of the J.P. Association, formal training was given on matters such as judicial interim release, show cause hearings, evidence and sentencing.

A manual entitled *Jury and the Justice System in the Supreme Court of the Northwest Territories* was prepared by Mr. Justice Tallis and members of the Supreme Court staff. The purpose of this manual is to inform potential jurors of their duties and responsibilities.

### *Legal Registries — Land Titles*

The number of land titles registered during the last quarter for which statistics are available show an increase of almost 20 per cent over registrations in the same quarter of 1980.

The Registrar of companies, societies, credit unions and co-operative associations is responsible for registering both profit and non-profit corporations and for maintaining information on all such corporations. Corporations created outside of the Northwest Territories but carrying on business in the Northwest Territories are also registered. More than 3,200 corporations appear on the corporate register.

There is also a document registry section in which documents that affect the ownership of property and the rights of creditors are filed. During the past year over 6,000 such documents were registered.

### *Legal Services Board*

The Legal Services Board is responsible for providing legal aid to eligible persons. The Board also acts as the carrier agency for Maliiganik Tukisiiniakvik (the legal clinic in the Baffin Region) and the Native Courtworkers program (based in the western part of the Territories). These groups have now become regional committees of the Board, and will eventually carry out some of the tasks now performed by board staff.

The Board and courtworkers have co-operated by placing a courtworker in the Cental Arctic community of Cambridge Bay.

Both the Native Courtworkers and Maliiganik Tukisiiniakvik take applications for legal aid, interview persons with legal problems before the circuit court arrives and ensure access to a lawyer. These organizations also provide information to the public on legal matters.

The Legal Services Board and its staff administer legal aid. Private lawyers provide the counsel. In 1980-81, legal aid was provided in 1,664 cases.

### *Highway Transport Board*

The three-member Highway Transport Board regulates the commercial trucking industry under the provisions of the Public Service Vehicle Ordinance.

During 1981, the Board processed 170 applications for renewal of operating authority with 73 resident N.W.T. trucking companies and 97 outside companies. A total of 69 new applications were processed with five authorities being granted and 64 denied.

The Board held committee meetings during the year at Yellowknife, Inuvik, Norman Wells, Hay River and Fort Simpson. It worked closely with the trucking industry, holding meetings concerning the Dempster Highway and the scheduled 1983 opening of the Liard Highway.

### *Public Utilities Board*

The Northwest Territories Public Utilities Board is authorized under the Public Utilities Ordinance to deal with applications brought before it by utilities operating in the Northwest Territories that supply electricity or natural gas.

The three-member Board held public hearings at Hay River and Yellowknife on rate applications and franchise renewals submitted by such utilities as Alberta Power Limited, I.C.G. (Plains Western) Ltd., and the Northern Canada Power Commission. Applications and subsequent orders are public information and are, therefore, available to the public on request. The Board held six public hearings during the year.

### *Safety Division*

The Safety Division is responsible for safety standards in a number of areas: fire, industrial, electrical/mechanical, occupational health and safety. Labour standards are also administered through this Division.

1981 fatalities and property losses were lower than the record levels of 1980. In 1981, there were 111 fires causing loss of life to three children and three adults, and a dollar loss of $5,227,825.

Project reviews of new construction totalled 118; a slight decrease over the past year. Construction of two new fire halls began, and others are planned.

The Division placed new firetrucks and equipment in three hamlets; reconditioned vehicles went to four other communities. Worn and unserviceable equipment was replaced. Firefighter training sessions were conducted throughout the Territories. These sessions emphasized the operation of new firetrucks and equipment. Sixty-three members of volunteer fire departments from 24 communities attended the annual seminar in Pine Point, where new equipment was exhibited and training sessions held.

The computer terminal of the Canadian Center for Occupational Health and Safety has greatly expanded the information available to the Occupational Health Section for dissemination to the public. The main objective of occupational health is to distribute information to N.W.T. residents in a readily understandable form.

Current programs include: a review of hazardous chemical agents relating to different trades, an audiometric testing program, a school safety/occupational health program, a program to identify hazards and a system to warn the public about dangerous products.

An increase in industrial activity throughout the western part of the Northwest Territories has caused the accident rate to rise. To deal with this problem, the Safety Division is increasing the number of safety seminars, school safety programs and safety committee meetings. These activities have resulted in more requests for information about safety-related matters.

The Mechanical/Electrical Section implements the Electrical Protection and Boiler and Pressure Vessel Ordinances. This activity involves reviewing plans and designs to ensure that equipment conforms to codes and standards; it also entails examining and certifying equipment and operators. The Section inspects mechanical installations and investigates accidents and fires.

The Labour Section receives and investigates complaints filed under the Labour Standards Ordinance and the Fair Practices Ordinance (human rights). The Section also administers the Wages Recovery and Employment Agencies Ordinances.

The Labour Standards Board hears appeals arising from decisions of the labour standards officer and holds hearings and decides issues in cases of disputed wage claims.

### *Mining Inspection*

The Mining Inspection Division implements all provisions of the N.W.T. Mining Safety Ordinance and mine safety rules. It does so by regularly inspecting mines and by consulting with management and workers. A review of the Mining Safety Ordinance has been completed and amendments and revisions to the legislation are being prepared.

The Mine Rescue Program is also being reviewed. Additional equipment and personnel are being made available to ensure that the ability to carry out rescue operations keeps pace with the rapidly growing mining industry.

### *Consumer Affairs*

The Consumer Affairs Office implements the Consumer Protection Ordinance and the Landlord and Tenant Ordinance. It responds to enquiries and mediates disputes between landlords and tenants. As well, the Office provides the general public with information on federal legislation covering product labelling and advertising.

A review of policy covering lottery licensing has now been completed, and the Office is considering input from the public in formulating the new policy.

### *Consumer Services*

Consumer Services administered drivers' licence tests to 1,113 people. Of those tested, 59 per cent were successful. There were 19,652 drivers' licences issued, compared to 18,416 in the previous year. There were 953 accidents reported. Eleven were fatal. There were 186 injuries and 756 accidents that resulted in property damage.

The number of licensed insurance companies increased to 136 from 124 in the previous year. Ninety-eight licences were issued to insurance agents, brokers, adjusters and salesmen authorizing them to sell life, accident, sickness and general insurance to N.W.T. residents. Eight insurance adjusters received licences.

A total of 325 licences were issued to professionals, and 640 business licences were issued to individuals and companies operating in unincorporated areas.

The vital statistics registry issued approximately 3,643 certificates of all types.

A total of 1,191 births, 267 marriages and 213 deaths were registered, and 164 adoptions and 33 changes of name were processed.

### *Library Services*

Library Services circulates books and other materials from 30 service points. Circulation increased to 122,742 during the 1980-81 year. Younger users of library services account for most of this increase and for more than half of the total circulation.

The request system supplied 2,648 items to borrowers. The system filled 170 requests through the inter-library loan service. This service is provided through the inter-library loan agreement between Alberta and the Territories.

Work to establish a Library Advisory Board and to develop minimum standards for library service within the Territories is continuing.

### *Prince of Wales Northern Heritage Centre*

During the last year, more than 24,000 people visited the Prince of Wales Northern Heritage Centre. They came from all parts of the Northwest Territories and southern Canada, and from as far away as Japan, Australia and Africa.

The archives of the Northern Heritage Centre serve as the official repository for documents pertaining to the history of the Northwest Territories. The archives have been concentrating on making their resources more accessible to the public. Three catalogues were distributed to communities across the Territories and to Canadian archives and libraries.

In 1981, over 1,000 artifacts, specimens and works of art (primarily fine and decorative arts and ethnology) were added to the permanent collections.

Renovations to the north end of the building will provide an environmentally-controlled area that will enable the Centre to host major exhibitions from other institutions.

A Museums Advisory Service with a full-time museums adviser has been established to promote high standards and to make professional expertise from the heritage centre available to community museums, historical societies and heritage groups. The Service has provided help ranging from technical planning advice for the Nunatta Sunaqutangit Museum Society in Frobisher Bay, to a workshop on museum cataloguing methods in Holman.

In the 1981 field season, the Centre co-ordinated and funded five archaeology rescue projects at Contwoyto Lake, Fort Franklin, Rankin Inlet, Gjoa Haven and Repulse Bay. The Centre carried out its own research and restoration project at Kellett's Storehouse on Delay Island. This is an ongoing project.

**Economic Development and Tourism**

Since assuming responsibility for the Department of Economic Development and Tourism in January 1981, Tom Butters has increased services to private business and has made considerable progress toward the goal of shifting all government-owned enterprises to the private sector.

As the minister responsible for manpower development, Mr. Butters participated in a multi-lateral forum of federal and provincial ministers. He attended federal-provincial ministers' conferences and met with his western counterparts to develop a strategy for increasing provincial/territorial participation in manpower programs.

During 1981, the Minister travelled to promote and develop the tourism industry in the Territories. His itinerary included a visit to Great Britain. After touring the Canol Road, he called for its development as a national heritage road.

Mr. Butters supports a more locally based tourism industry, based upon aid from the Territorial Government. The goal is to create a community-oriented strategy for developing the tourist industry in the Eastern Arctic. The "tourism zone" approach has led to zone associations being established for the Yellowknife area, south of the Great Slave Lake, the Keewatin and the Mackenzie Delta.

The Department has developed a policy covering parks that has enabled to N.W.T. parks to achieve equal status with those in the provinces. The federal government has shown its acceptance of this policy by concurring with Territorial Government's terms and conditions for creating a new national park on Ellesmere Island.

Mr. Butters concluded socio-economic agreements for a number of resource development projects taking place in the Territories. These include Cominco's Polaris Mine and Echo Bay Mines' Lupin project. All other non-renewable resource development projects, planned or underway, are expected to fall under similar agreements.

To enable the people of the N.W.T. to realize the maximum benefits possible from the Norman Wells Pipeline and oil field development, Mr. Butters worked to ensure that the federal government transfers adequate contingency funds to the Government of the Northwest Territories.

In the area of cost-shared agreements, the Minister was actively involved in negotiating a new, comprehensive subsidiary agreement under the general development agreement. He was also involved in developing resource-revenue sharing mechanisms with the federal government.

*Commerce*

The Commerce Division includes five services: small business development, co-op development, commercial enterprise operation, marketing and financial services. It is responsible for advocating, stimulating and supporting entrepreneurial activities in the Northwest Territories.

The N.W.T. government provides technical advice on financial management, marketing, and training to new and existing businesses. It also provides limited financial assistance to businesses experiencing difficulties and to community groups for pre-investment studies and core-funding purposes.

The Division has prepared guidelines acceptable to resource developers which will allow smaller, local businesses, when competitive, to participate in the "spin-offs" that result from major economic activities.

The Division provided technical assistance and financial support to the lumber and fishing industries and to the expanding Country Foods Program.[1] Memberships were retained in related industry associations, such as the N.W.T. Lumbermen's Association (grade stamp agency) and the Great Slave Lake Fishery Advisory Committee. These organizations are committed to encouraging viable businesses in their respective sectors.

The Division provided technical advice to arts and crafts enterprises in the regions and assistance was given to both the N.W.T. Arts and Crafts Council and the arts and crafts program of the Native Women's Association. In the latter case, funds were provided to conduct two training workshops and also to financial inventories.

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[1] The program is designed to harvest natural food, and market it commercially.

Information and assistance was provided to southern galleries exhibiting the work of northern artists. For example, the Division assisted both the Winnipeg Art Gallery, which exhibited the work of Rankin Inlet artists, and the newly opened Restigouche Art Gallery in New Brunswick.

During the year 1980-81, six meetings of the Eskimo Loan board were held, resulting in 36 loans being approved totalling $1 897 000. One meeting was held jointly with a Special A.R.D.A. meeting in Frobisher Bay in September, 1980.

Seven meetings of the Small Business Loans and Guarantees Board were held, all in Yellowknife. It approved fifteen loans totalling $592 000. and guaranteed 36 loans having a total value of $495 000.

Five special A.R.D.A. meetings were held with 69 approvals totalling $2 461 000.

The financial services operation is constantly adjusting its program to keep up with the changing needs of its clients. During the year, greater use was made of Canadian Executive Service Overseas people to assist businesses experiencing technical, financial or management difficulties.

A number of funding requests in excess of the loan limit have been received. Where possible, loans have been made on a joint venture basis with the Federal Business Development Bank. This arrangement has been in effect for the past three years and is working well. However, the size of some loans indicates that the small business loan fund should be expanded. Draft legislation to meet this need is now being prepared.

The co-operative system in the N.W.T. continues to grow. Sales and other revenues totalled $20 328 925. A net savings of $836 620 was realized. Membership for the 40 operating co-operatives grew to 4,493, and permanent employment increased to 351 positions with total direct wages and benefits exceeding $3 500 000. In addition, estimates suggest that as many as 1,500 residents benefit indirectly from co-operatives through the sale of arts and crafts, renewable resource exploitation and related activities.

The Canadian Arctic Co-operative Federation Limited continues to play a key role in the system by providing merchandise and services to its member co-operatives. With financial support from the Government of the N.W.T. and the Government of Canada, the Federation provides operational support, staff training and board development, accounting and auditing services, and helps individual co-operatives to solve problems.

Approval was given to amalgamate the Canadian Arctic Co-operative Federation and the Canadian Arctic Producers Co-operatives. Formal completion of the amalgamation is scheduled to occur in 1982.

As indicated earlier, the Department of Economic Development and Tourism is continuing to "privatize" government-operated enterprises. All enterprises were advertised as being available for either sale or management under contract according to various other arrangements acceptable to the Government of the N.W.T. The Department is reviewing proposals from the private sector for managing the enterprises it now operates.

As a first step toward shifting government-owned businesses to the private sector, the central warehouse in Yellowknife has sold all of its inventory of merchandise, and the Government's central marketing agency has been discontinued.

### *Manpower Development*

The Manpower Development Division provides a focal point on employment, industrial training, apprenticeship and related support programs for Northerners in business and industry.

The Division encourages industry and businesses operating in the North to hire and train northerners. Residents are counselled to take advantage of training and employment opportunities.

Under one of the Division's programs, the Territorial Government, the trainee and the employer contract for employment and practical skill training. The trainee prepares for permanent employment by learning the necessary skills from the employer under actual working conditions. The government pays for part of the trainee's salary and monitors his or her progress. The program is effective in creating employment in many businesses, including the mining and petroleum industries.

The Short-Term Employment Program (STEP) is the Territorial Government's job-creation program. It is aimed at areas with limited wage employment opportunities. Under the supervision of the regions, STEP continues to provide more than 4,000 man-weeks of employment.

The petroleum and mining industries work with the Division in developing methods to train and employ northern labour. In-house training programs covering a wide variety of jobs are used. During the year, the Division negotiated with new mines and major oil companies to use northern manpower as a matter of policy.

The Apprenticeship Program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training.

As of August 1981, there were 612 trainees in the designated trades across the Northwest Territories. Of these, approximately 100 were employed by the Territorial Government.

Apprentices completing their training and obtaining certification as journeymen totalled 127. Of these, 97 also obtained interprovincial qualification under the "red seal" program.

Under the Tradesmen's Qualification Program, 86 tradesmen obtained journeyman certification, with 10 of these also qualifying for the interprovincial standard "red seal".

### *Tourism*

In 1981, the Department carried out nine major tourism and park projects. These ranged from park construction to assessing the feasibility of community-based tourism in the eastern Arctic. The Department also completed the construction of two major campgrounds along the Dempster Highway. Construction began on a new park on the Liard Highway.

The use of campgrounds and parks increased sharply in 1981, demonstrated by a 50 per cent increase in revenue collections. The forest fire problem in the southern Mackenzie resulted in some fire damage at several Territorial parks.

For the fourth consecutive year, Travel Arctic promotions have drawn an increased number of tourist inquiries. By August 1981, the year's total was 46 000, an increase of 73 per cent over the same period in 1980.

The Department promoted tourism through exhibits at four Canadian sports shows, through direct mail promotions in conjunction with the Canadian Government Office of Tourism and the Yukon Government, and by attending a number of travel-trade and sales meetings.

The western Arctic Visitors Association and the Big River Country Zone Association both played an active role in promoting tourism within the Inuvik and Fort Smith regions.

The Keewatin Chamber of Commerce also participated in several successful promotional activities throughout the year.

### *Planning and Resource Development*

The Planning and Resource Development Division is responsible for initiating economic development plans and for suggesting policy that will encourage the equitable distribution of economic gains in the Northwest Territories.

The Economic Planning Secretariat is responsible for researching, developing and recommending medium to long-term development strategies to encourage balanced growth of new industry and traditional economic activities. The Secretariat reviews and evaluates new and existing departmental programs and policies to ensure that they meet the objectives of the Territorial Government.

The Mineral and Petroleum Resource Section carried out discussions with Echo Bay Mines, Panarctic Oils, Esso Resources, Dome Petroleum, Cominco, Cullaton Lake Mines, and Cadillac Explorations. These discussions led to the development of memoranda of understanding and the signing of socio-economic agreements.

In future, the Secretariat will emphasize the monitoring and evaluation of explorations and other new developments to seek additional opportunities for northern residents.

The General Development Agreement Section administers the General Development Agreement (GDA), which is largely financed by the federal government. About $2 million was approved in 1981 under the GDA. Only half of this amount was actually disbursed. Negotiations were underway to sign a new GDA that would have a much wider scope.

Hire North is a project funded by the federal government, but administered by the Territorial Government. It provides training, employment and business opportunities for northerners in trades and occupations associated with the construction and maintenance of highways.

During 1981, there were 130 940 training hours, 22 per cent of total employment. About 80 per cent of the work force were northern residents of Dene ancestry. Employment during 1981 reached 240. Hire North is now constructing a section of the Liard Highway.

### Finance

As Minister of Finance and Deputy Chairman of the Financial Management Board, Tom Butters actively pursued new directions in the financial arrangements between the Northwest Territories and the Government of Canada.

Formal presentations were made to the Government of Canada's Standing Committee on Indian Affairs and Northern Development. This was the first time that the Government of the Northwest Territories had the opportunity to respond to the Committee's review of its budget. A presentation was made to the parliamentary task force on federal/provincial fiscal arrangement. The final report recognized that a longer-term formula financing approach would achieve better results.

The Minister promoted the concept of fiscal accountability and restraint in government and has directed the Department of Finance to develop new revenue and taxation alternatives. At the same time, he lobbied federally for tax relief for northerners and for recognition of resource revenues and tax revenues by non-residents in a taxation year.

The Minister also participated actively in discussions of the Intergovernmental Committee of Finance to develop a government-to-government relationship and promote new fiscal arrangements for the Territories.

During 1981, the Department was involved in implementing a new financial system and provided training courses for financial officers throughout the Government of the Northwest Territories. These courses emphasized the development of internal control procedures and covered the kinds of support needed to carry out regional financial operations. In 1982, the courses will emphasize the improvement of accounting policies and standards and methods of providing better financial information for management.

The Treasury Division is responsible for collecting, managing, controlling and reporting all revenues. Its responsibilities encompass fiscal and economic planning (including the development of tax policies), borrowings, investments and cash management, control of government assets, insurance and risk management.

During the past year, the Division stressed identifying sources of revenue and its subsequent collection.

In 1982, the Division will emphasize fiscal and economic planning in order to maximize tax revenue, and will stress the development of risk management programs and asset controls.

The Comptrollership Division is responsible for preparing financial management information, including the Territorial Accounts; for developing, co-ordinating and implementing financial policies and procedures, which provide for the effective control and reporting of all government expenditures; and, for prompt payment of all government employees.

During the past year, the Division has concentrated on implementing a new financial system. This activity has included the development of financial sub-systems, procedures and training programs.

The Division's emphasis for 1982 will be on establishing effective financial controls and on developing training programs for government financial officers.

**Financial Management Secretariat**
The Financial Management Secretariat, a central agency of the government, provides advice and support services to the Financial Management Board, a sub-committee of the Executive Committee.

The Secretariat is responsible for planning, co-ordinating, analysing and consolidating the operating budget of the Government of the Northwest Territories and for providing other budget information for the Legislative Assembly.

The Secretariat also provides working support for the government's participation in inter-governmental financial negotiations.

Responsibility for financial analysis of capital budget submissions was transferred to the Secretariat in 1981.

The Secretariat has always supported the concept of government administrative accountability. In 1982, it will co-ordinate the development of indicators of performance for the government's accountability-based budgeting system.

**Audit Bureau**
The Territorial Audit Bureau reports to the Commissioner and to the Deputy Commissioner, who serves as Chairman of the Audit Committee. Apart from performing internal audits, the Bureau fulfils the role of a provincial auditor general, particularly in performing audits of all federal-provincial cost-sharing agreements and in doing year-end work for the Auditor General of Canada.

During the year, the Bureau carried out audits of most departments, all regions and many settlements. It provided help to local staff and managers in instituting proper accounting procedures, and discussed its audit observations with those in a position to take corrective action.

The Bureau is assuming responsibility for reviewing the budget, and carrying out audits of the Housing Corporation, the General Development Agreement, financial information systems, hospitals, the health information system and several other new or expanded activities.

**Social Services**
The Department, under Arnold McCallum, Minister of Social Services, continued its efforts to identify and deal with problems of the handicapped. In other areas of social services, achievements included signing a devolution agreement between the Town of Frobisher Bay and the Territorial Government. Under this agreement, the Town became responsible for delivering certain social programs. A new minimum security community correctional centre was opened and a study of the Baffin Correctional Centre was completed.

In recognition of the Year of the Disabled, the Department began work in the Baffin and Inuvik regions to identify the problems of the handicapped and to determine how they might be solved. Some tangible results were achieved. For example, it supported "awareness advertising" that the N.W.T. Council for Disabled Persons had developed for use on the CBC's northern television service. Other examples are noted under "Services to Aged and Handicapped".

A major step in the re-assignment of responsibility for delivering social services occurred with the signing of a devolution agreement between the Town of Frobisher and the Territorial Government as noted above. A transfer of funds to the Town for providing social services was approved. The Town is now responsible for operating child welfare, community correction and financial assistance programs, and for providing other support services to families, the aged and handicapped. The Department encourages similar arrangements with other communities who may wish to assume responsibility for delivering their own social services.

The Minister officially opened the new South Mackenzie Correctional Centre in Hay River in June. The Centre is designed to permit inmates to provide services to the community while serving their sentences.

In 1981, the Department provided two courses at the community college level. These courses were designed to improve and update the knowledge and skills of persons working in the social services field. One was an introductory social work course for child-care workers and social workers. The second was an introductory course in criminology. The staff of Edmonton's Grant McEwan Community College taught both courses.

The Minister attended two provincial/territorial meetings of Ministers of Social Services. He presented the N.W.T.'s views on various topics, including the proposed young offenders legislation and the effect of proposed changes in the Unemployment Insurance Program. He supported other ministers in their call for immediate action with respect to proposed changes in the Vocational Rehabilitation Development Program Agreement.

*Alcohol and Drug Program*
In 1981, the Alcohol and Drug Program staff continued its program to increase community awareness of alcohol and drug problems.

As part of the Alcohol and Drug Program, the Department developed a curriculum for training native staff who work on community alcohol and drug projects. The curriculum covers treatment methods and program administration.

The N.W.T. Alcohol and Drug Co-ordinating Council renewed funding for 13 alcohol and drug community projects. In addition, two new projects received funding in 1981, one at Rae/Edzo and one at Fort Norman.

*Corrections Services*
During 1981, the population of N.W.T.'s correctional institutions continued to rise.

A major study of corrections in the Baffin Region, particularly the Baffin Island Correctional Centre, has resulted in a decision to build a permanent structure at Frobisher Bay to replace temporary units. The Baffin Island Correctional Centre offers a land-based program for teaching offenders, particularly those from the Eastern Arctic, many of the traditional hunting and survival skills.

*Family and Children's Services*
The trend toward older children coming under the case or supervision of the Superintendent of Child Welfare continued during 1981. Their problems are often associated with behavioural difficulties, handicapping conditions or delinquency. The Department has found it necessary to adapt departmental homes (previously used as short-term receiving homes for young children) to residences that provide care and supervision for older, difficult to manage children.

Emphasis was placed on developing foster and adoptive homes to provide care for children of all ages. A special effort was made to recruit more native northerners as group home, foster, and adoptive parents.

The number of young people coming into conflict with the law is causing increasing concern. The Department found it necessary to open a group home service in the Central Arctic and to develop special foster care services in other locations.

The Hay River and Fort Providence Dene bands, with financial and other assistance from the Department, successfully organized and operated three summer camps during 1981.

A working committee has been established with representation from the juvenile justice system. Its objective is to prepare for the implementation of the new federal Young Offender's Act, which is expected to be in effect within two years. The new legislation emphasizes legal representation for young persons and alternative means of both dealing with juvenile offenders and keeping them in custody. The Act is likely to have a major effect on services to juveniles in the Territories.

### *Financial Assistance Programs*

No food rate increases or additional allowances for persons in need were instituted in 1981. However, the rising costs of fuel and other necessities and the increasing number of applications have resulted in an 18 per cent increase in assistance costs. Approximately 70 per cent of financial assistance expenditures are for food.

A brochure providing information to working parents about the Department's Day Care Subsidy Program was developed with the assistance of the Yellowknife Day Care Association.

### *Services to Aged and Handicapped*

The Department devoted much effort to determining the needs of handicapped people so that it could develop effective long-range plans. A study of the needs of handicapped people in the Inuvik Region was completed and will serve as a basis for follow-up work being carried out by the Inuvik Council for the Disabled.

A pilot project was conducted in the Baffin Region to determine the feasibility of developing community-based services in three Baffin communities for physically and mentally handicapped children. The results of this project have prompted the development of a regional interdepartmental committee to promote and co-ordinate the development of services.

A group living place for mentally handicapped adults was opened in Yellowknife to help residents of the Great Slave Lake area to develop independent living and pre-vocational skills.

Statistically, the aged form a very small percentage of the population. However, the aged have distinct needs. These are reflected in the increased demand for home care services and in the number of communities working to develop resources to care for aged persons.

## Health

As Minister of Health, Arnold McCallum was involved in several major initiatives during 1981. These included appointing a local board of management to the Frobisher Bay General Hospital and completing two regional health care studies, relating to the Central Arctic and Keewatin regions. A third study addressing the provision of health care services in the Inuvik region will be done.

The Minister also supported the retention of the School of Dental Therapy in Fort Smith. The Department reviewed existing health legislation and policy, and new legislation was drafted to respond to changing requirements in the Northwest Territories for health programs.

The Minister worked to smooth the transfer of health services and the control, operation and management of the Frobisher Bay General Hospital from the federal government to the Government of the N.W.T.

The Minister announced that benefits under the supplementary health programs would be extended. New benefits include transportation, accommodation and meal allowances for N.W.T. residents treated outside the N.W.T. for certain ailments covered under the programs.

The Minister supported introduction of a Psychologists Ordinance which would register psychologists in the N.W.T. and regulate the profession to ensure a high standard of service.

In the policy area, the Department introduced a family life education project, with funding provided by Health and Welfare Canada. Mental health development received continued emphasis during the past year. In St. Johns, at a health conference of provincial and territorial health ministers, Mr. McCallum made strong representation in favour of a single health delivery system in the N.W.T.

### *Insured Services*

The Department administered a broad range of insured services, including medical care, hospital care, pharmacare, medical travel, and other supplementary benefits. The hospital insurance benefit was extended to cover detoxification services provided by a provincial or territorial approved centre. The supplementary benefits were extended to include congenital kidney malformation and diabetes, for which the full costs of diagnosis, treatment and travel are paid.

The Department of Health and the Department of Social Services jointly fund co-ordinated home care programs in Fort Smith, Hay River, and Yellowknife.

### *Hospitals and Health Centres*

H.H. Williams Memorial Hospital in Hay River is a modern health centre operated through a board of management, serving residents from the southern Great Slave Lake area, particularly the communities of Hay River, Pine Point, Fort Resolution and Fort Providence.

The facility provides in-patient and emergency services, home care, public and environmental health, social services. It also provides offices for visiting specialists.

The Fort Smith Health Centre is a modern, accredited health care facility operated through a local board of management. It provides in-patient acute care (15 beds), extended/chronic care (10 beds), out-patient and emergency services, home care, physiotherapy, public health and social services. The Centre also provides offices for visiting specialists.

Stanton Yellowknife Hospital is another modern, accredited facility. It is a 72-bed acute care hospital, operated through a board of management. The Hospital provides a wide variety of in-patient services. About half of the patients are residents from outside Yellowknife.

In the area of rehabilitation medicine, the hospital provides occupational therapy, physiotherapy, audiology and speech therapy programs, as well as a psychiatric program, which will service Yellowknife and major centres in the Fort Smith, Central Arctic and Inuvik regions.

Planning is underway for a new hospital in Yellowknife. It will provide 115 acute care and 20 extended/chronic care beds, as well as extended diagnostic and treatment services. It is expected that its design will have been completed and construction started by 1982-83.

*Information, Promotion and Awareness*

The Health Resource Centre library is providing current and relevant health information material to professionals in the N.W.T., schools, voluntary agencies and the public.

The Department of Health is developing an ongoing training program and a manual for health promotion officers at the community level. Resource material on hypothermia and carbon monoxide poisoning are being prepared. The Department is also producing a sound-on-slide presentation on breastfeeding.

The Department of Health continued to fund students who are pursuing health careers. A high demand exists in the Northwest Territories for health care personnel. Eight students in health-related areas were awarded bursaries in 1981.

The bursary program helps alleviate manpower shortages in the health area by encouraging health workers to attain additional skills.

*Family Life Education*

The Family Life Education Project entered its second year of operation with funding provided by Health and Welfare Canada.

In the first year, the Project emphasized the development of an accurate data base. The second year began with the circulation of this information to both professionals and the general public through newspaper articles and 60-second public service announcements of C.B.C. television.

The media campaign brought requests for workshops from the communities of Fort Simpson, Rae-Edzo and Pangnirtung. Workshops were held for community health representatives and nursing assistant students.

*N.W.T. Health Care Plan*

The N.W.T. Health Care Plan provides "no-premium" medical care and hospital insurance to eligible N.W.T. residents. The Department of Health's Supplementary Health Program, its Subsidized Medical Travel Program and Pharmacare Program cover certain specified conditions not insured under the Plan.

Everyone registered under the N.W.T. Health Care Plan is eligible for benefits under medicare. The Plan covers all physicians' services carried out in the office, clinic, hospital or home. The Plan also covers certain surgical-dental procedures when required to be performed in a hospital.

The N.W.T. Hospital Insurance Plan is administered under the direction of the Territorial Hospital Insurance Services (THIS) Board, whose members are appointed by the Commissioner with advice from the Legislative Assembly. The Department of Health provides support services to the Board on matters falling under its jurisdiction.

Dr. Jock Lemire, Pediatrician, Frobisher Bay General Hospital.

The Board met several times during 1981. It dealt with the establishment of in-patient and out-patient rates, the need for a mental health program for N.W.T. residents through the Stanton Yellowknife Hospital and the need for additional specialists in the Northwest Territories.

**Renewable Resources**

The Minister of Renewable Resources, Richard Nerysoo, worked to ensure that future developments in the non-renewable resource area will not prevent northern people from continuing to harvest the renewable resources of the N.W.T.

With economic activity occurring at an unprecedented rate, including oil and gas development in the Beaufort Sea, the Norman Wells expansion and oil pipeline, mining developments and the Arctic Pilot Project, environmental considerations were of major importance. Accordingly, a new Division of Environmental Planning and Assessment was established to co-ordinate the Territorial Government's participation in environmental reviews and renewable resource planning.

A significant development during the year was the more active role in wildlife management played by the Baffin Region Hunters' and Trappers' Association and the Keewatin Wildlife Federation. Renewable Resources staff have also been holding meetings in the west in an attempt to set up a similar game management board for the Mackenzie Valley.

Mr. Nersyoo met with ministers of the federal government and the provinces of Saskatchewan and Manitoba to address the problem of declining numbers in the Kaminuriak and Beverly caribou herds. An agreement was reached on a co-operative approach to conserving these animals and extensive consultation took place with native hunters. These consultations resulted in the creation of an interjurisdictional Caribou Management Board. The Board includes native representatives from all regions concerned. Government technical staff from each region provides support.

Extensive efforts were also made to reach an agreement with the Yukon on joint management of the Porcupine caribou herd. Native groups in both Territories were consulted and an agreement will likely result.

*Wildlife Service*

The wildlife service supports wildlife users through consultation with the hunters' and trappers' associations, and by offering a wide variety of assistance programs.

One new program introduced in 1981 was a gasoline subsidy to help hunters and trappers cope with rising fuel costs. Other programs include fur incentive subsidies, trappers' assistance loans, outpost camp grants and grants to hunters' and trappers' associations.

A new firearm safety instructor's manual and a trapper's manual are being produced by the Wildlife Service. The firearm safety manual will standardize firearm safety courses already being held in some communities by wildlife officers.

A number of fur workshops were held in the Mackenzie Valley and Delta communities. These workshops were a joint effort between the Wildlife Service and local hunters' and trappers' associations, and were designed to ensure long-term optimum fur returns for the trappers.

Graduates of the Renewable Resource Technology Program in Fort Smith have filled four permanent positions with the Wildlife Service. Three became wildlife officers in the regions, and one was hired as a technician in Yellowknife. Training for community resource officers, wildlife guardians, assistant wildlife officers and in-service training is considered a priority.

Caribou surveys were carried out in the Koukdjuak River area, Northern Melville Peninsula, and on the North Baffin Island herds. Calving ground surveys were also carried out on the Bluenose and Beverly caribou herds.

The first year of a three-year polar bear management study began along northeast Baffin Island to gather population data needed to assess the hunting quotas of Clyde River and Broughton Island. The hunters' and trappers' associations have actively participated in the study.

The Wildlife Service, the federal Department of Fisheries and Oceans, and regional hunters' and trappers' associations also worked together to study the feasibility of commercial fisheries in Amadjuak Lake, Baffin Island; in Delise Lake, Paulatuk; and in the Mackenzie Delta.

The N.W.T. Wildlife Service, the Inuvialuit Development Corporation, the Sachs Harbour HTA and the Inuvialuit Game Council worked together to develop sound plan for managing the muskox and Peary caribou herds on Banks Island. This activity involved harvesting 200 muskoxen on Banks Island to test the marketability of muskox meat in northern stores.

Resource exploration and development projects range from small scale quarrying operations to mega-projects like the Norman Wells pipeline. The Wildlife Service is concerned about all projects because of their potential effect on wildlife populations and wildlife habitat. For example, the Wildlife Service participated in the Federal Assessment and Review process (FEARO) and the National Energy Board (NEB) hearings that were conducted for the Norman Wells pipeline project.

*Environmental Services*

A new Environmental Services Division administers several N.W.T. ordinances and federal Acts that are intended to ensure that the northern environment remains uncontaminated, and that industry, commercial establishments, and municipalities do as little damage as possible to the air, land and water. When environmental damage does occur, the service takes remedial action and ensures that clean-up is thorough.

A working agreement between the Service and Environment Canada ensures close co-operation and mutual support. Similar agreements with at least two other federal departments are also being considered. The present environmental emergency reporting system will be expanded with development of a statistical data base for computer storage and display.

*Science Advisory Board*

The Northwest Territories Science Advisory Board provides advice and support to the Legislative Assembly on matters of science, engineering, and technology. The 13-member board includes both northern and southern Canadians who have scientific backgrounds and a knowledge of science-related problems in the Northwest Territories

In 1981, two of the Board's regular meetings were held in the Yellowknife area, while the third was held at Pond Inlet and Resolute Bay. The Board also sponsored a conference in Yellowknife that brought together those who use and manage renewable resources. Delegates to the conference discussed problems related to the hunting, trapping and fishing sectors of the territorial economy.

Recent publications of the Board include an assessment of the wind energy potential available to northerners for both domestic and commercial applications.

The Board also produced a summary of the proceedings of the conference on renewable resources, which it had sponsored.

### Energy and Resource Development

An Energy and Resource Development Secretariat has been established to assist Richard Nerysoo, the Minister responsible for energy and non-renewable resource development in the N.W.T.

One of the Minister's major goals is to ensure that N.W.T. residents receive maximum benefits from all energy and non-renewable resource developments in the North.

The Secretariat will develop comprehensive policies and strategies for Executive Committee review and approval. The Secretariat's work will include developing a socio-economic policy that would set socio-economic standards for large non-renewable resource development. The staff of the Secretariat has been directed to assist regional offices in developing plans for minimizing adverse social and economic effects resulting from such development.

To date, the Secretariat has developed an energy policy that was presented to the Legislative Assembly for discussion. It also worked with native and non-native groups in the N.W.T. to ensure that the federal oil and gas Bill C-48 would reflect the interests and concerns of all people in the Territories.

The Minister is working to ensure that N.W.T. residents will be provided with electricity at reasonable cost. With his federal counterpart, he is exploring alternative energy sources to replace expensive diesel generated electricity.

The Minister is also the political focal point for the Executive Committee at public forums such as the National Energy Board, environmental assessment review panels, the Public Utilities Board and various parliamentary hearings onenergy and non-renewable resource development.

The Department held discussions with the federal government on funding allocations by the Department of Indian and Northern Affairs for the Norman Wells project. The Department presented its priorities for the project to ensure that the federal government would take the interests of the Territorial Government into account. As well, the Minister developed a joint working position with the Dene Nation and Métis Association of the N.W.T. on common project-related concerns.

### Department of Education

A major concern of Dennis Patterson, Minister of Education, has been the need to increase the relevance of the education system and its programs especially for the Inuit and Dene of the Northwest Territories.

To become fully aware of local concerns, the Minister actively participated in the Special Committee on Education, which held hearings in 45 communities.

During 1981, the Department emphasized native language and cultural instruction, teacher training, greater autonomy and regional education bodies and vocational and post-secondary training for students.

The Minister encouraged the use of the native languages in all areas of instruction and community life. A number of special projects were undertaken in native languages throughout the year.

The Department expanded the Teacher Education Program offered at Fort Smith's Thebcha Collect (formerly the adult vocational training centre). The program at Frobisher Bay was expanded to accommodate people unable to leave their communities to attend the two-year course.

The Teacher Certification Board was enlarged in order to better represent the Northwest Territories Teachers' Association and local education authorities. A representative of the Teacher Education Program was appointed to the board.

Community and regional education bodies were encouraged to assume more responsibility for areas specified in the Education Ordinance and to indicate other areas of possible control.

The Adult Training Centre in Fort Smith assumed the status of a fully accredited college with a governing body. The Centre will meet post-secondary educational needs.

A high school Certification Program was instituted in recognition of the need to provide training for students planning to enter the work force rather than to follow an academic program. The program will first be introduced in the schools in Yellowknife, Frobisher Bay and Inuvik at the beginning of the 1982-83 school year.

The first Minister of Education from the N.W.T. to be a member of the Canadian Council of Education Ministers, Mr. Patterson attended the 37th session of the Council in Fredericton, New Brunswick and the 38th session in St. John's, Newfoundland.

#### *Programs and Evaluation*

The academic staff of the University of Saskatchewan reviewed the entire core curriculum. Work was done in-house on a review of the N.W.T. kindergarten program.

A year-long study on bilingual education was completed. As a result, several initiatives were taken in developing the N.W.T. Teacher Education Program and in promoting native language development among Dene communities. A project to develop a bilingual teaching materials project was undertaken at Fort Providence in co-operation with the local Dene band. The Department also funded the development of a similar Slavey language project at Fort Good Hope. It provided continuing support for the Loucheux program at Fort McPherson and for the Slavey program at Fort Franklin.

In the eastern Arctic, the base of the Teacher Education Program was expanded. The aim was to better prepare staff to teach in the native language as well as in English. More effort also went into preparing Inuktitut learning materials.

During 1981, the Department particularly emphasized service to the handicapped. A committee from the Departments of Education, Health and Social Services worked to place handicapped students in an appropriate instructional setting.

Several medium-sized communities have asked the Department to expand the grade levels offered. During 1981, grade 10 level Alberta programs were combined with territorial programs and offered in Aklavik, Pangnirtung, Pond Inlet and Cambridge Bay.

#### *Adult Vocational Training Programs*

In 1981, the Department began to develop a two-year diploma level business administration program, later to be made available at Fort Smith. College level courses currently available there include Dental Therapy, Teacher Education and Renewable Resources.

The Department, in co-operation with Dome CanMar, provided courses in seamanship at the Dome CanMar base in Tuktoyaktuk. The courses were offered to train personnel for off-shore employment in the oil industry.

After the approval of the Norman Wells pipeline project in Yellowknife had been announced, the Department set as a priority, adult skills upgrading in Mackenzie Valley communities and vocational training by establishing a new school at Inuvik and expanding the existing one at Fort Smith.

*Support Services*
The Support Services Branch is responsible for the administration of the higher education program, including finance, statistics, capital planning, personnel, teacher certification, and legislation and policy development.

The Department of Education's operating budget was $48 859 000 for the 1981-82 fiscal year. The Department also received $16 007 000 in capital funds through the 1981-82 Estimates. In the 1981 school year, 610 teaching positions provided instruction for 12,567 students.

During 1981, there was much debate in the Legislative Assembly on financial support for post-secondary students. The Department of Education continues to use the existing Student Grants and Bursaries Ordinance and Regulations. The Student Aid Program is being revised as directed by the Legislative Assembly. In 1981-82, the Student Grants and Bursaries Board approved 355 grants and 23 bursaries.

At the close of the 1980-81 school year, the Minister of Education attended the opening of the new Matonabee School at Pine Point, which replaced the one destoryed by fire in February 1980. Construction proceeded on a new junior high school to replace the William McDonald school in Yellowknife. A new elementary/junior high school is being built in Rankin Inlet to replace the Maani Ulujukfacilities. Planning also began for new schools for Lac La Martre, Norman Wells and Clyde River, and for a new high school in the Keewatin.

A major development was the approval by the Executive Committee of a policy to develop a college system in the N.W.T.

**Government Services Department**
The Government Services portfolio is a relatively new one. It originated as a result of the Commissioner's task force on administration. Two of the Department's main functions are purchasing goods and materials and maintaining appropriate inventories of all goods and materials.

The Minister, Kane Tologanak, introduced a northern purchasing policy. This policy directly affects the northern economy because it gives northern suppliers a preference over suppliers from southern Canada. To date, the Department has signed more than 30 standing offer agreements with northern suppliers. Before the policy had been introduced, most of these agreements would have been made with southern suppliers.

The Department monitors the annual re-supply in the Territories and assesses the possible effect of non-renewable resource development projects on shipping patterns in the eastern Arctic. The Department also monitors and presents briefs to the Canadian Transport Commission to ensure adequate airline service to the residents of the Northwest Territories.

Supplying petroleum to more than 40 communities not served by private oil companies is another departmental responsibility. Local contractors deliver the fuel within each community.

In August 1981, responsibility for energy conservation was transferred from the Department of Renewable Resources to the Department of Government Services.

*Finance and Administration Section*
While providing administrative support and financial management services to the Department, this section also administered the federal Heating Fuel Subsidy Program. Many northern residents outside Yellowknife applied for and received a rebate on their fuel costs. This rebate went to homeowners and tenants who paid more per gallon for their fuel than did their counterparts in Yellowknife. The per gallon subsidy was paid on a maximum of 1,500 gallons a year per household.

*Office Services Group*
The Office Services Group is responsible for internal and external communications of the N.W.T. government.

*Systems and Computer Services Division*
The Systems and Computer Services Division is responsible for developing, maintaining and operating the Government's computer systems.

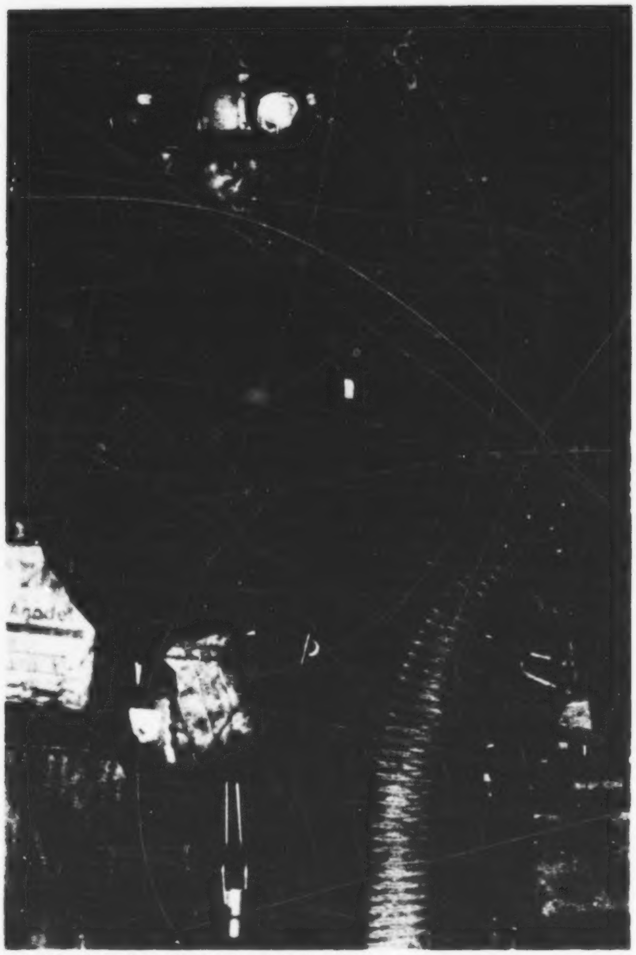
A three-year computer plan was developed that determined the Government's needs for information and the personnel and computer hardware necessary to meet those needs. According to the plan, a new building housing upgraded equipment will replace the Government's present computer facility.

*Supply Services Division*
The Division's Purchasing Section is responsible for acquiring all goods the government needs for operating its programs. The Distribution Section maintains inventories of these goods and provides certain transportation services.

The Department is working to computerize its inventory and traffic management systems, in order to reduce costs and raise efficiency in both these areas.

*Energy Conservation Division*
The Division's main function is to manage the Federal/Territorial Energy Conservation and Renewable Energy Demonstration Program. Regional administration is carried out in Frobisher Bay and, in the future, this Program may also be administered in other regions. A number of requests for information and assistance have been received. Nine projects have been funded. Energy conservation projects include retrofitting houses in Pangnirtung, recovering heat from the refrigeration unit in a major shopping center in Yellowknife, building a "wood gasification" and heat plant in Fort Providence and developing a passive solar/forced air hybrid house in Fort Smith. The Division also staged an Energy Week Demonstration in Frobisher Bay.

The Division purchased an infrared thermography unit to measure heat loss from buildings. This equipment has been in great demand and has been used extensively in the Baffin and Keewatin Regions.



Alvin Kanak works withs/Jumbo drill, Nanisivik

### *Petroleum Products Division*

During 1981, existing facilities for storing and dispensing petroleum products were improved and made more safe. improvements included illuminating "tank farms" and replacing dangerous ladders with proper cat walks and spiral staircases. Aviation refueling facilities are being installed at Holman Island and Sachs Harbour in response to the aviation industry's need for turbine fuel.

Decentralization of storage and distribution facilities for petroleum products continued during 1981. Regional offices assumed more responsibilities, such as co-ordinating resupply, negotiating contracts for distributing fuel and administering their operating budgets.

## **Department of Local Government**

Co-operation and discussion with native organizations have been departmental priorities which have brought the Territorial Government's objectives for political and constitutional change closer to the form of government envisioned by the native population of the N.W.T.

The Minister of Local Government, James Wah-Shee, participated in many community and regional meetings to discuss how people might have more control over their local affairs. Such meetings took place at Fort Good Hope in January, Rankin Inlet in March, Wrigley in August and Inuvik and Snare Lake in September.

One topic discussed at most of these meetings was the proposed Community Government Ordinance. This draft Ordinance was the basis of discussions about the wide range of responsibilities that communities might want to assume in managing their affairs.

### *Municipal Affairs*

Under the Homeowner's Tax Rebate Program, resident owners living in a city, town or village received a rebate on their municipal taxes from the Government of the N.W.T. The Program provided for a 50 per cent rebate of taxes up to a maximum of $200 in any given taxation year. In areas where the rate of taxation is low, the rebate provided is 50 per cent of the taxes to a maximum of $50 in any given taxation year.

The incorporation of the communities of Gjoa Haven, Spence Bay, Coppermine and Norman Wells as hamlets brought to 24 the number of hamlets in the N.W.T. Including the seven tax-based municipalities of Yellowknife, Hay River, Fort Smith, Fort Simpson, Inuvik, Pine Point and Frobisher Bay, there were 31 incorporated municipalities in the N.W.T. In addition, there were 24 organized settlements with locally elected councils that acted in an advisory capacity on municipal matters. In the hamlets and settlements, approximately 90% of the administrative staff and council members were Inuit, Indian or Métis.

The Property Assessment and Taxation Program continued to expand and an additional 12 communities in the Baffin and Keewatin regions were added to the roll in 1981.

Debenture loans were issued to certain tax-based municipalities to finance capital projects such as road paving, sidewalk construction, fire engines and fire halls.

Most of these municipalities have developed three-to-five-year capital plans so that the impact of debenture loan payments on local taxation can be scheduled to coincide with assessment growth and othe revenue factors.

### *Town Planning, Lands, Water and Sanitation*

Community plans were initiated or prepared with the communities of Lake Harbour, Pangnirtung, Pond Inlet, Sanikiluaq, Chesterfield Inlet, Coral Harbour, Repulse Bay, Fort Liard, Fort smith, Hay River, Jean Marie River, Lac la Martre, Pine Point, Snowdrift, Yellowknife, Fort Norman, Inuvik and Coppermine. A major three-year study was begun to define a new planning ordinance that will provide the legal framework for all northern planning.

Legal Surveys were carried out in Pangnirtung, Cape Dorset, Lake Harbour, Frobisher Bay, Whale Cover, Baker Lake, Fort Rae, Cambridge Bay, Coppermine, Tuktoyaktuk and Norman Wells. Aerial photographs were taken of most Western Arctic communities.

Land assembly projects were completed in Cape Dorset, Lake Harbour, Rae, Tuktoyaktuk and Coppermine. Site development, land development and road construction projects were sponsored in most N.W.T. communities.

A new land valuation policy was implemented to encourage home ownership and to reflect development costs in land prices.

The Water and Sanitation Program provided for approximately $10 million worth of capital improvements to water, sewage and garbage facilities in approximately 30 communities. Major water suply projects were started in Fort Franklin, Fort McPherson, Fort Simpson, Pine Point, Tuktoyaktuk and Yellowknife. Construction of sewage facilities was undertaken in Baker Lake, Fort Norman, Inuvik, Rae-Edzo and Yellowknife.

A grant system was initiated to provide financial assistance to homeowners to install a piped sewer service connection where community conversion to such piped services is economically feasible.

*Development and Training*

The Development and Training Division helps communities to develop democratic, responsive governments, and encourages community-wide understanding of local responsibilities. The Division works with elected and appointed local officials by providing advice, running conferences and operating training workshops at the community, regional and territorial levels.

Much of the Division's work was concentrated in Norman Wells and the Central Arctic settlements of Coppermine, Gjoa Haven and Spence Bay, which attained hamlet status. Preparatory work was also begun in Cape Dorset and Lake Harbour to help these communities to achieve their goal of attaining hamlet status in 1982.

The first certificates at the intermediate and university level were issued under the new certification program in Municipal Administration. This course, developed by the Division's Training Section, deals with municipal management, financial administration and local government theory specific to the N.W.T. Seventeen people obtained intermediate certificates issued after they had completed the first course offered at Edzo in January 1981. Another seven people completed the university course and earned certificates.

*Airports*

The joint Territorial/Federal program to improve airports and aviation support services at 38 communities in the N.W.T. progressed according to schedule. On completion of the program in approximately five years, airports in most N.W.T. communities with populations of over 100 will have improved runways, air terminal buildings, navigational aids, airfield lighting, weather and communication equipment and equipment for airfield maintenance and emergency services.

In 1981, major airport construction projects resulted in expenditures of more than $12 million, bringing the total expenditures of program since its inception to nearly $50 million. Runway construction was completed at Fort Liard, Rankin Inlet, Fort Norman, Aklavik, Sachs Harbour and Igloolik. Terminal buildings were started at Spence Bay and Repulse Bay and improved lighting systems installed at Spence Bay, Whale Cover, Lake Harbour, Cape Dorset, Pond Inlet, Sanikiluaq and Broughton Island.

When each community airport has been completed, hamlet and settlement councils hire trained local people to operate and maintain the airports and to provide weather observance and communication services. In 1981, approximately $3.5 million was spent on operating and maintaining community airports in the Northwest Territories.

On April 1, 1981, the Territorial Government assumed responsibility for training all airport staff. By providing three formal courses, the government trained 19 northerners in weather observation and communication skills. Regional workshops provided additional training for 16 airport maintenance personnel. In 1981, there were more than 50 full-time community council employees working at 24 community airports.

*Recreation*

The Executive Committee approved a new recreation facilities policy, which will be implemented in phases during 1982. A review of sports policy for the Territories was begun, and a similar review of community recreation policy will soon be undertaken.

The Northern Games Association was decentralized with separate games held in Fort McPherson, Coppermine and Repulse Bay. Revitalized Dene Games were held in Rae-Edzo. Cultural contingents representing the N.W.T. performed at the Vancouver Canadian Heritage Festival and at the Canada Games.

Sport North and the Recreation Division sent 46 athletes (softball, swimming and track and field) to the Canada Summer Games. There was also extensive participation in the Arctic Winter Games held in Fairbanks, Alaska in March 1982.

**Aboriginal Rights and Constitutional Development**

As Minister responsible for overseeing the Territorial Government's input into native claims negotiations, James Wah-Shee provided direction to his staff in the Aboriginal Rights and Constitutional Development Secretariat. The Government has worked to ensure that its native claims inputs represent the views of the general public and that it articulates the aspirations of native groups.

A major concern of the Secretariat has been to protect aboriginal rights as they are affected, for example, by the Canadian constitutional resolution. In March, the northern leaders' conference provided a forum for joint action on these issues.

Constitutional issues continued to be of utmost importance. The discussion paper "Our Land, Our Future" was distributed across the N.W.T. in November to solicit the views and suggestions of the general public about the future political and constitutional development of the Territories.

In keeping with its commitment to work with people to develop regional forms of government in response to initiatives form communities, the Government of the N.W.T., represented by the Secretariat, is studying the development of a Western Arctic regional government as suggested in the COPE proposal.

## Information

The Department of Information is responsible for providing information to residents of the Northwest Territories and other parts of Canada about the programs, services and activities of the Government of the Northwest Territories. It provides central public relations, printing, graphic design, advertising and interpreting services to the government.

During 1981, the Department of Information gave special emphasis to improving the government's ability to communicate in native languages. The Department particularly stressed the extension of the Dene language service.

### *Northern Communications Program*

In 1981, six communities (Sachs Harbour, Lac La Martre, Repulse Bay, Lake Harbour, Broughton Island and Clyde River) received regional radio and television service through the Department's Northern Communications Program which began in 1978. Sixteen communities now have these services.

The program provides equipment that enables communities to receive CBC network television and CBC regional radio services.

Sachs Harbour was the first community having fewer than 250 residents to receive radio and television service. Originally, the program was intended to supply equipment to communities with a population of between 250 and 500. However, the Executive Committee, acting on a recommendation of the Legislative Assembly, lowered the population "floor" to 150.

The four remaining communities in the N.W.T. having between 150 and 250 residents (Whale Cover, Paulatuk, Wrigley and Rae Lakes) are scheduled to receive the service in 1982.

The Department of Information also encourages the development of local radio stations in two ways. First, community radio societies purchase their own studio equipment and can connect to the radio transmitter installed by the Department. This enables them to provide local programming, usually in the native languages. To date, this arrangement has been followed in 13 of the 16 installations. to date.

The Department also has a community radio grant program to assist local radio stations to meet operating costs.

### *Public Affairs Division*

The Public Affairs Division continued working toward building a full-service audio-visual unit. The Division also started the development of a system for producing all audio-visual materials in Dene languages.

The audio-visual unit has a staff experienced in planning, budgeting and producing 16 mm films. Projects ranged from helping a native communications group to produce an experimental animated film to filming a 20-minute presentation on the Bathurst caribou herd for the government's wildlife service.

The audio-visual unit also assisted the Native Communications Society of the Western Arctic (NCS) to produce a cultural historic film in the Nahanni area by providing a cinematographer.

A film seminar was co-sponsored and financed with CBC for independent filmmakers in the North.

Other division staff began researching the feasibility of translation into the Slavey, Loucheux, Chipewyan and Dogrib languages. They also compiled lists of potential freelance translators. Projects were completed for program departments in which the materials were produced in these languages, as well as in English and Inuktitut. During 1981, public affairs officers prepared about 300 press releases and 100 public service announcements for CBC northern television.

Longer-term public relations and communications plans were developed for the health, social services and economic development and tourism departments, a process which should expand to other areas of the Government.

Finally, the Public Affairs Division continued to provide assistance to native communications groups. For example, the Division helped the Native Communications Society and the Inuit Tapirisat of Canada to hold a seminar on newspaper, radio, film and public relations techniques. The Department also provided financial assistance to the Native Communications Society that enabled it to hold a workshop designed to improve production and management capabilities of community radio stations.

### *Publications and Production Division*

The Dene and Inuit Traditional Life Series, produced by the Publications and Production Division in 1981, was one of the most successful projects. The Series consists of separate packages of 24 collectors' quality archival prints on both the Dene and Inuit people of the Northwest Territories. Each package includes an illustrated booklet on the history of the people. The Series is being marketed by outlets throughout the North and in southern Canada by the Hudson's Bay Company.

The Division worked extensively for the Department of Local Government on a publication detailing water and sanitation facilities in the Northwest Territories. It produced a prototype publication of the town plan for Baker Lake. The effectiveness of the publication at the community level will be reviewed and a new series of community town plans published in a standard format.

The territorial printer announced the release of two new legislative publications in December 1981. The 1979-80 annual volume of ordinances, and the 1980 revised regulations will go on sale early in 1982. A new publication called "Legislative Summary" will be published on a regular basis after each session of the Legislative Assembly. The booklet will summarize the issues debated, any new legislation and amendments made to existing legislation.

### *Interpreter-Translator Corps*

The N.W.T. Interpreter Corps continued to provide language services for all departments of the Territorial Government. The Corps also provided these services to all levels of Territorial courts, the federal government and other agencies and organizations as time permitted.

Formed in 1973, the Corps was established to aid commuications between English-speaking and native language residents of the Northwest Territories.

The language of the Inuit, Inuktitut, is written in syllabic form and thus cannot be handled in a word processing system based upon the Roman alphabet. Accordingly, computer software modifications are being made to enable the word processing system to store, retrieve and edit syllabic material and to print out in syllabic form. Further research to examine the feasibility of machine translation from English to Inuktitut is underway.

During 1982-83, the Department will be examining the possibility of developing a micro-computer network that will link its regional offices in Frobisher Bay, Rankin Inlet and Cambridge Bay with its headquarters staff.

**Department of Personnel**

This Department is responsible for planning and co-ordinating personnel management within the public service of the Government of the Northwest Territories. These activities include such functions as staffing, employee housing, administrative policy development, employee relations, employee benefits, classification and compensation and staff training programs.

Of the 1,059 staff hired in 1981, a total of 890 were hired from the North, while 169 were from outside the Territories. These figures compare with a total of 932 staff hired from the North in 1980. In addition, 270 teaching positions were filled. Eighty-seven of the positions filled in 1981 were transfers and 206 were promotions.

A program of student summer employment resulted in about 170 students being hired.

Native employment reached a level of 37 per cent of the total number of positions filled.

*Administrative Policies*

By implementing most of the major recommendations of the 1979 task force on housing, the Government of the Northwest Territories took a major step away from the existing policy of providing accommodation for its employees.

Employees in centres located on a highway system will now pay rent according to market conditions. The Government will provide new employees with accommodation for a period of only one year. The sale of surplus government accommodation to employees and eventually to the public is planned for 1983.

**Department of Public Works**

The Department is responsible for designing, building, operating and maintaining all works required by the Government of the N.W.T. Departmental responsibility extends to the operation of ferries, vehicles, heavy construction equipment, and the maintenance and reconstruction of roads and highways.

Improving the energy efficiency of buildings and works continues to be a departmental priority, since approximately $26 million of the operations and maintenance budget was spent for utilities. Increased energy efficiency is an important aspect of new design and construction, and the Department has a major program for retrofitting and upgrading energy standards of existing systems.

*Contracts*

A new minor works contract form has been instituted for projects of less than $100,000 in value. The elimination of bonding for these projects has helped small contractors in the N.W.T. compete for contracts and has improved contract administration process. A new maintenance contract form is currently being drawn up for use in the regions and at headquarters.

The northern preference policy has been changed to include all northern sub-trade contractors in addition to northern general contractors. It provides a preference range of 5 or 10 per cent of the contract value to the northern contractor.

The Department has increased the number of N.W.T. contractors and the proportion of local labour used for construction projects.

*Operations*

Insulation was upgraded in many buildings and mechanical services have been modernized. The Department has introduced low-energy appliances, and high-efficiency electric motors. Motorized fuel dampers have been introduced and high efficiency fuel furnaces and heaters have been installed. The use of waste heat from Northern Canada Power Commission generators to heat government buildings has continued. These energy conservation efforts have yielded more than $400 000 in savings.

The Department has accelerated the Accommodation Services Program, which is aimed at reducing the number of government-owned houses in areas where housing markets exist.

An additional 120 vehicles of various types, worth $3 million, were delivered to communities. These vehicles either replaced obsolete units or added to the number of municipal services vehicles. Five communities received modern fire trucks.

In total, the Department of Public Works is responsible for operating and maintaining some 550 000 square metres of buildings and 1,200 pieces of mobile equipment, as well as municipal works and petroleum storage "tank farms" across the N.W.T.

*Architecture*

Major school construction projects include continuation of the Maani Ulujuk Elementary and Junior High School, Rankin Inlet and completion of the Mezzanine area of the Keketak Ilinakvik School, Gjoa Haven. The Rankin Inlet School, started during the summer of 1980, is scheduled for completion in early 1982. It will replace temporary classrooms constructed after the former school building had been destroyed by fire.

Planning is underway for new schools in Lac La Martre and Norman Wells and for a major addition to the school in Clyde River. Breynat Hall, the Adult Vocational Training Centre student residence at Fort Smith was recently damaged by fire. Work is underway to repair this building. Plans are complete for major renovations to Akaitcho Hall in Yellowknife. A community services building containing community offices, post office, radio station, and recreation space is under construction in Pelly Bay.

### *Engineering Division*

The largest project carried out by the Division in 1981 was the design and construction of a new 20 000 000 gallon reservoir for Tuktoyaktuk. This is being built using 500 000 cubic metres of sand dredged from Tuktoyaktuk Bay as basic building material. The reservoir was shaped in 1981. The liner will be installed and the reservoir filled in 1982.

Major water supply works are underway in Fort Simpson, Rae-Edzo, Fort McPherson, Rankin Inlet and Frobisher Bay. In Frobisher Bay, work is being done to improve the usefulness of the system in winter.

The Division is improving the sewage systems in several communities. It has acquired a portable video camera which can be passed through finished sewer lines to find blockages and reveal faults. In Pangnirtung, a new incinerator was ready for operation at the end of the year. Work has started on disposal areas for both sewage and solid wastes in Baker Lake.

The high temperature hot water heating system in Frobisher Bay is being extended to heat 35 new houses being constructed by Public Works Canada. New heating equipment is being installed in a number of other Frobisher buildings.

New "tank farms" were constructed in Fort Franklin and Paulatuk. A major rebuild of the facilities of Gjoa Haven is underway, and a new tank for aviation fuel is being built in Coppermine. The major five-year program of tank farm improvement in Baffin Island is now complete. The new tank farms built in Coral Harbour and Whale Cove last year have been accepted from the contractors.

### *Highways Division*

Prolonged dry weather presented difficulties in keeping the gravelled highways in the South Mackenzie area in good condition for driving. Forest fire emergencies have hampered regular maintenance work, since highway crews were diverted to controlling traffic and escorting convoys traversing the danger zones.

The Department analyzed the previous contractual arrangements for maintaining the Mackenzie Highway extension to Fort Simpson. As a result of the review, the Department subsequently arranged for smaller contracts covering shorter stretches of road. Maintenance contracts were arranged with a local contractor in Fort Simpson and the Indian Band group called Nogha Enterprises. A similar maintenance arrangement will likely be arranged for the Liard Highway after it has been completed by the federal government.

Low water levels impeded ferry operations, particularly at the Yellowknife Highway crossing of the Mackenzie River. The Department had to impose weight restrictions for the ferry at the location, as well as for the ferry at the Liard River. A new cable ferry for the Peel River crossing on the Dempster Highway was commissioned in September.

Projects for the Department of Local Government were undertaken in various regions. Projects included street construction, site development landfill and drainage surveys. In the Baffin Region, specifications were written for a special aggregate-screening plant that can be airlifted in a Hercules aircraft, and for the design and construction of a steel bridge for Pangnirtung.

The road between the town of Inuvik and the airport was surfaced with asphalt pavement. This 10 km stretch of highway will be watched with interest over the next several years to determine whether or not this kind of road surface is suitable for other communities having similar environmental conditions.

### **Northwest Territories Housing Corporation**

The N.W.T. Housing Corporation is responsible for developing, managing and maintaining social (subsidized) housing programs for the Northwest Territories in order to provide adequate accommodation for all N.W.T. residents.

The Corporation's programs and activities are directed toward people and housing. A summary objective of its programs is to meet the housing goals as determined at the community level.

The Corporation's capital budget for 1981 was slightly over $25 million. Of this amount, the Canada Mortgage and Housing Corporation (CMHC) funded 75.5 per cent. The Government of the Northwest Territories funded the remainder.

The Corporation's operations and maintenance budget for 1981 totalled more than $35 million, with 24.1 per cent from CMHC and 52.6 per cent from the Government of the Northwest Territories. Non-cash items contributed 12.9 per cent and the collection of rent 10.4 per cent.

In addition to providing subsidized housing, the Housing Corporation offers a range of other housing programs. Interest in home ownership increased markedly in 1981 and the Small Settlement Home Assistance Grant Program (SSHAG) continued to gain in popularity. This is a self-help program, which required the would-be homeowner to contribute his or her labour as equity. The corporation grant of $15,000 is now supplemented by an additional $3,000 to assist with such costs as freight on logs, tools and equipment.

A Rural and Remote Housing Program is offered by the Housing Corporation in partnership with CMHC. This Program allows lower income families an opportunity to own their own homes at mortgage rates geared to income.

Exchanging ideas has proven valuable to the development and implementation of the Corporation's programs. To foster this exchange, the Corporation held two major housing conferences in 1981. One was held in the western Arctic and the other in the south Mackenzie region. The Corporation and CMHC shared the cost of these conferences, and all agencies involved in housing were encouraged to participate.

The Corporation also carried out many training activities. It held nine training workshops for housing associations across the Territories in 1981. These workshops usually ran for three to five days and focused on the various programs that the Corporation offers. The Corporation's policies and the procedures involved in implementing its housing programs successfully were explained at these sessions.

A construction training program, successfully implemented in Pangnirtung and Frobisher Bay, was expanded to the communities of Hall Beach, Igloolik and Clyde River. Forty trainee carpenters are learning the necessary skills to enable them to build corporation housing.

Contractor training has also been introduced in the communities of Coral Harbour, Whale Cove, Arctic Bay and Baker Lake in co-operation with the Department of Economic Development and Tourism. This program will enable local contractors to compete more effectively within the construction industry.

The Housing Corporation maintains and manages over 4 000 rental units across the Territories, including 10 housing projects for senior citizens. A number of other programs, such as the Extra-ordinary Maintenance Program, ensure the upkeep of these units. During 1981, $1.2 million was spent on maintaining 800 rental units.

Activities in the construction field centered on two important areas during 1981: rehabilitating existing homes and building new ones. Rehabilitation became a focal point because of rising operating and maintenance costs. In total, 132 units were rehabilitated, incorporating improvements such as upgraded insulation, energy-efficient doors and windows and modern plumbing and electrical fixtures.

In new construction, a total of 94 public housing family units and 30 Territorial government staff units were built in various communities. Other new construction projects included four, single-person fourplexes, three warehouses and a duplex. All housing is now designed in conjunction with housing federations and, where feasible, with local communities.

**Liquor Control System and Liquor Licensing Board**

The Liquor Control System is responsible for purchasing, distributing and selling alcoholic beverages to the residents of the Northwest Territories through its liquor stores, agencies and licenced outlets. The System provides administrative services to the Liquor Licensing Board.

The Liquor Licensing Board was active in revising regulations to meet changing conditions and requirements. Several licences were suspended because of contraventions of the Liquor Ordinance.

Local option plebiscites are now mainly delegated to regional offices, with Liquor Control System personnel providing expertise when requested.

Either prohibition, rationing or restriction is currently in force in 25 communities, and some form of regulation is in process for several others.

**Workers' Compensation Board**

The Workers' Compensation Ordinance provides compensation for wages lost as a result of injury from work related accidents.

During 1981, the Board processed 2,550 new claims.

In 1980, the Board raised pensions payable to those now on pension. It granted supplementary pension increases in 1981 that would bring the benefits payable for all accidents that occurred prior to January 1, 1981 to the following levels: disability pensions based on a year's maximum assessable income of $20,400; widow's pensions of $561.00 per month; children's pensions of $127.50 per month.

A task force was established to study the operations of the Workers' Compensation Board. It also looked at how workers' compensation could develop in the future within the Territories and reviewed how workers' compensation operate in other jurisdictions. The task force has submitted a report to the Board. Its recommendations affecting the worker and the employer will be considered in any changes in the Workers' Compensation Ordinance.

A merit rebate plan, which is a type of assessment rebate program for employers, finished the second year of a three-year test program. This program is designed to encourage safety and reduce injury costs. The effectiveness of this program will be considered after its third year of trial operation.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 399 307 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 233 241 | 58.4 |
| Administration and Support | 111 468 | 27.9 |
| Economic Growth | 33 857 | 8.5 |
| Evolution of Government | 9 196 | 2.3 |
| Leisure and Recreation | 5 179 | 1.3 |
| Protection of the Environment | 4 770 | 1.2 |
| Social and Cultural Development | 1 596 | 0.4 |

# Government of the Yukon Territory

***Responsibilities***

The Government administers the Yukon in accordance with the Yukon Act, Yukon Ordinances and applicable federal laws.

**Executive Council Office**

***Responsibilities***

The Executive Council Office provides advice, research, and administrative support to the Executive Council (Cabinet), the Cabinet committees on Legislation and Finance and the Statutory Instruments Committee (created in 1981 to increase the involvement of government backbenchers). The Office also provides these services to two permanent advisory committees of deputy ministers — Internal Management and Economic and Social Planning — and to the office of the Government Leader and the office of the Commissioner. It also administers the program of Commissioner's Awards, presented to individuals for bravery or public service.

The Office of the Internal Auditor, which reports directly to the Government Leader, is included in the Office's budget. Information on changes in legislation and internal policies is provided to all Government of Yukon departments.

Road to Dawson winding into the wintery scene, Yukon. Photo by Pat Morrow, 1982.

***Review of 1981-82***

Mr. Douglas Bell continued his two year term as Commissioner, appointed under the federal Yukon Act. The role of Commissioner is evolving toward that of a provincial Lieutenant-Governor, as the Executive Council moves toward full Cabinet responsibility.

In December, Mr. Bert Law of Whitehorse was appointed as Administrator to act on behalf of the Commissioner when he is absent from the Yukon.

On April 1, 1981, the Executive Council comprised four members: the Hon. C.W. (Chris) Pearson, president and Government Leader, who represents the riding of Whitehorse Riverdale North; the Hon. H.D. (Dan) Lang, Whitehorse Porter Creek East; the Hon. M.S. (Meg) McCall, Klondike; and the Hon. E.G. (Geoff) Lattin, Whitehorse North Centre.

On May 6, the appointment of Howard C. Tracey, representing Tatchun, brought the Executive Council back to its normal membership of five. Members' portfolios from then until year-end were:

*Mr. Pearson:* Executive Council Office; Finance; Public Service Commission; and Intergovernmental Relations.

*Mr. Lang:* Renewable Resources; Tourism and Economic Development.

*Mr. Lattin:* Highways and Public Works; Municipal and Community Affairs; Yukon Housing Corporation; Yukon Liquor Corporation.

*Mr. Tracey:* Justice; Government Services; Consumer and Corporate Affairs; Workers' Compensation Board.

*Mrs. McCall:* Education and Recreation; Health and Human Resources; Heritage and Cultural Resources.

The Executive Council held a public meeting in every Yukon community during the year. One meeting was also held on Herschel Island, a nineteenth century whaling station that is now surrounded by Beaufort Sea oil exploration.

Major legislation brought forward, and passed by the Legislative Assembly included a new Wildlife Ordinance, and a new Municipal Ordinance and financing system.

On March 30, 1982, An Act to Amend the Interpretation Ordinance was passed and given assent. Among other changes, all pieces of Yukon legislation are now designated as "Acts", rather than as "Ordinances", as they formerly were. This Act and several companion Acts give legal recognition to Yukon's recent constitutional development.

Major legislation under review at year-end included the Landlord and Tenant Act, the Workers' Compensation Act, and the Motor Vehicles Act.

***Plans for 1982-83***

The major event of the year will be an election. It will provide Yukon voters with their first opportunity to evaluate the party and Cabinet system of government. The 1978 election was the first one fought on party lines. With changes in the role of Commissioner in October 1979, the Executive Council assumed full responsibility for policy decisions, and day-to-day direction and control of the Government's operations.

The priorities of the Executive Council continue to be Yukon Indian land claims, energy development and conservation, and the Yukon economy.

## Department of Finance

***Responsibilities***

The Department of Finance's activities are directed toward ensuring that the financial resources of the Yukon Government are properly planned, used and controlled. It also works to ensure that money is spent according to the Government's priorities. The Department manages and controls the Yukon Consolidated Revenue Fund and assists all departments and agencies in financial matters. It provides financial advice and assistance to the Executive Council and presents the Main Estimates, Territorial Accounts and other financial information to the Legislative Assembly. Finally, the Department monitors the financial performance of departmental operations and is involved in developing financial policies, procedures and controls.

*Financial Operations Branch*

The Financial Operations Branch keeps the financial records of the Government of the Yukon. It processes suppliers' accounts and the Government's payroll and prepares periodic financial statements including the Territorial Accounts. It collects and monitors taxes and revenues, handles banking and investments and administers the Home Owners' Grants Program.

*Financial Management Branch*

The Financial Management Branch is responsible for fiscal relations with the federal government and for analyzing all expenditure proposals submitted to Cabinet. It co-ordinates the budget process, prepares the Main Estimates and monitors the financial performance of departments.

*Administration Branch*

This Branch provides administrative and personnel services to the Department.

***Review 1981-82***

The Department continued to emphasize providing direction and guidance in financial matters to departments and making better financial information available to the Executive Council. The Department continued to improve the Financial Management System and adopted a new computerized payroll system. This system is scheduled for implementation early in the 1982-83 fiscal year.

In the 1981 fall session of the Legislature, the 1982-83 Capital Main Estimates were tabled and passed. Accordingly, preliminary work could start on major projects over the winter months in order to publish tenders and start work as early as possible in the short construction season.

***Plans for 1982-83***

The Department will continue to further improve and refine its accounting procedures and financial administration and control procedures. In addition, it will review the financial planning and budgeting process and begin work on program evaluation and developing a capital plan.

## Department of Education

***Responsibilities***

The Department of education is responsible for five areas: Elementary-Secondary Education, Adult & Continuing Education, Recreation Services, Manpower Planning and the Women's Bureau.

*Elementary-Secondary Education*

On March 31, 1982, 4 976 students were enrolled in 9 urban and 16 rural schools in Yukon.

A new school in Old Crow was started after fire destroyed the existing building in December 1981. This school's design is based on modular construction techniques. Units were built in Edmonton and trucked to Old Crow. Construction included a teachers' residence and a Wildlife Branch office. An addition to the Carmacks school was also completed.

The Department continued to introduce new programs and develop its curriculum. A new Language Arts program in the intermediate grades was introduced, which completed the revision of the Program from Grades one to seven. Alternative education programs were started in Dawson and Whitehorse, and French immersion was expanded to include Grade 1 in Whitehorse, and Kindergarten in Faro.

The Department followed the recommendations submitted by the Career and Vocational Education Committee; it emphasized career education and counselling and appointed a full-time career counselling co-ordinator. The program supporting the introduction of native languages, history, and culture continued to develop, and outdoor education programs were expanded.

The Seventh Annual Superintendent's Meeting and School Committee Conference was held in November. The sessions dealt with the "Changes in Education".

*Resource Corps*

This program is funded through a Canada-Yukon agreement and has continued to provide employment and training opportunities to the unemployed and under-employed. Projects this year have included work on the Mayo Local Improvement District Compound, Carmacks Pool, Mayo Conservation Facilities, Dawson City Conservation Facilities and the construction of campground shelters in various communities.

*Yukon Campus*

The Yukon Teacher Education Program changed its name and emphasis.

Programs were expanded to include a more diversified selection of courses so that students could pursue studies in fields other than Education. A study skills instructor was added and the use of local instructors was emphasized.

*Adult & Continuing Education*

The Adult and Continuing Education Branch organizes programs of interest to adults covering vocational and technical training, industrial, academic and language training and diploma courses. These courses are offered through the Yukon Vocational and Technical Training Centre, the Apprenticeship and Industrial Training Section and other programs.

*Yukon Vocational & Technical Training Centre*

The Yukon Vocational and Technical Training Centre offers pre-employment and diploma courses through three Divisions: Academic, Business, and Applied Arts; Trade & Industrial; and Extension Services. Ten-month pre-employment courses were offered in Automotive Mechanics, Carpentry and Woodworking, Heavy Equipment Mechanics, and Industrial Electricity. Five-month courses were conducted to train heavy equipment operators and linemen. One-month Journeyman upgrading courses were held in conjunction with the Apprenticeship & Industrial Training Section in the following trades: Painter & Decorator, Welder, Heavy Equipment Mechanic and Carpenter. A trade-oriented program for women was offered. The Academic, Business and Applied Arts Division spanned a broad range of programs. Academic upgrading in reading, writing, and mathematical skills were offered along with life skills, social studies, and basic science.

General Education Development training enabled individuals to obtain high school equivalency diplomas during the year. To supplement this training, a Voluntary Tutor Program for basic literacy was started in Whitehorse. Business Education courses provided training in three skill areas: accounting, clerical/typing and secretarial. The Centre introduced a two-year Business Administration Program, with two part-time courses offered this year. By the fall of 1982, this program will become a full-time course. The Certified Nursing Assistant's Diploma was provided through a five month theory course at the Vocational Centre and a five month practicum at the Whitehorse General Hospital. Food Services provided training in commercial and short-order cooking, as well as a one month course in outdoor camp cooking. Short courses were introduced in fur grading and trapping, data processing, basic wilderness survival, writing skills for new Canadians, and rigging and signalling for carpenters.

Community courses were offered through Extension Services. Community Learning Centres were established in Dawson, Carcross, and Watson Lake. Anik 'B' Satellite programs continued in Whitehorse, and additional pick-up stations were set up in Dawson and Faro. Arrangements are being made to extend the Anik 'B' programming to Watson Lake. A Mobile Training Unit fully equipped to provide courses in small engine repair was brought into service last year. It is used to deliver training to both in-school youth and out-of-school adults. To date, the small engine repair course has been taught in four rural communities.

*Apprenticeship & Industrial Training Section*

The Apprenticeship & Industrial Training Section is responsible for Apprenticeship Training, Trades Certification, and Industrial/Commercial on-the-job training. The Section also registers apprentices and makes arrangements for them to receive in-school technical training. In the past, all such training took place in one of the neighbouring provinces. However, during the past year, levels III and IV Carpentry were offered through the Yukon Vocational & Technical Training Centre in Whitehorse.

Industry is showing increasing interest in apprenticeship training, which has resulted in a significant increase in the number of apprentices. Training has been expanded to include the trades of Painter & Decorator, Welder, Partsman, Power Lineman, and Instrument Mechanic. Journeyman upgrading courses co-ordinated by the Section, and delivered by the Vocational Centre, were offered in the trades of Carpenter, Welder, Heavy Equipment Mechanic, and Painter & Decorator. Courses in Welder Practical and Oil Burner Mechanic are expected to be given next year.

Industrial training was offered through the Canada Manpower Industrial Training Program (CMITP) and the Critical Trades Skill Training Program (CTST). Under the Adult Occupational Training Agreement, the Apprenticeship and Industrial Training Section and the Canada Employment Centre determine priorities for employer-centered training. They provide Yukon employers with expertise and assistance in developing training plans, and monitor the quality and technical aspects of the training. The Adult & Continuing Education Branch has been involved in planning for a Yukon College. The preliminary schematic drawings for Phase I of the College were completed this year.

*Recreation Services*
The Recreation Branch is responsible for providing community recreation services and assisting recreational, sports and artistic organizations and events in the Yukon.

*Community Recreation Services*
Two Community Recreation Consultants work with community councils, recreation boards and organizations to assist with local recreation programs and services. The Consultants provide information and training and development to support community recreation programs. The concepts of setting goals and comprehensive planning have been and will continue to be stressed this year in the various community and regional workshops.

Each Recreation Board is eligible to receive a Recreation Assistance Program Grant. This Grant may be used to fund the local Recreation Board's programs, or the Board may give the money to local groups so that they can run their own. The grant remains a valuable source of recreation funds for all eligible Yukon communities.

In 1981-82, five communities were involved in the summer Pool Program sponsored by the Recreation Branch. Plans to transfer responsibility for this Program to local authorities are being initiated for 1982-83. If communities accept this responsibility, the Recreation Branch will provide only technical and financial support.

Most Recreation Boards sent delegates to the Fourth Annual Recreation Board Members Seminar, which called for a major review of Recreation Branch programs. The review has begun, and the Branch is looking for input from communities, as well as from recreation, sports and arts groups, associations, and individuals. This review, a priority for 1982-83, will shape new directions for Yukon recreation in the 1980's.

*Territorial Recreation Services*
The Yukon Sports Federation and the Yukon Arts Council provided administrative and program support to the Territory's sport governing bodies and arts organizations respectively. These federations receive funding from the Recreation Branch.

*Sport:* In 1981-82, eighteen territorial sport associations received funding from the Recreation Branch for administration purposes, leadership development, travel, and special projects. It is the responsibility of the Community Recreation Consultant in charge of sport to monitor and administer this funding. The Branch provides assistance in planning and an information service.

Other responsibilities of the Recreation Branch are to implement the theory portion of the National Coaching Certification Program and to promote all technical coaching clinics planned by Yukon Sports Associations. Three Level I Theory Clinics were held throughout the Territory in 1981-82. In 1982-83, more people will be trained to conduct clinics in order that demand for the coaching theory program can be met. In 1981-82, twenty technical coaching clinics were conducted through Sport Associations in Yukon.

*Games:* Only one Yukon athlete was sent to the 1981 Canada Summer Games. However, more than 300 athletes participated in the Arctic Winter Games. These bi-annual trans-north games are held in Fairbanks. The Yukon Sports Federation was under contract to select and prepare Yukon's team.

*Arts:* The Recreation Branch was again active in developing the Arts in Yukon. It hosted a "Yukon Contact" — providing an opportunity for performing artists to display their talent and community sponsors to meet and discuss performance plans. The panel exhibition of children's artwork in the foyer of the Government Building was a popular attraction throughout the year. Schools were once again provided with performing arts workshops and the "Artist in the School" program. The Recreation Branch assisted Yukon's professional artists by providing information on funding, national contacts, and interprovincial projects. This type of information was also provided to local groups and organizations.

Besides providing financial assistance to the Yukon Arts Council, the Recreation Branch assisted the Council's "Performing Arts on Tour" Program, visual arts workshops and multiculturalism programs. It also assisted the Council in its planning for the future. The Branch produced an Arts Funding Index and directories of touring and visual artists for the use of the Council and its members. The Recreation Branch also participated in several national arts projects including the cultural program of Jeux Canada Games and the Yukon segment of the Canadian Heritage Festival. The Branch also helped to co-ordinate the Federal Cultural Policy Review Committee meetings in June of 1981. Finally, the Branch will continue its present work in the arts for 1982-83, while planning the future directions for the Arts in Yukon.

On January 1, 1982, responsibility for Manpower Planning was returned to the Department of Education. Since June, 1979, responsibility for this area had rested with the Manpower & Labour Branch, Department of Consumer & Corporate Affairs.

This re-organization followed a review of Adult & Continuing Education, Manpower and Labour related functions in the Government of Yukon. Activities during the fiscal year included preparing reports on Women in the Yukon Labour Market, Indian People and the Yukon Labour Market and preparing a manpower perspective on Yukon's tourism industry, northern mega projects and manpower delivery services. The Branch completed background papers for the Internal Review Committee on Manpower & Labour and determined the research requirements in connection with the Beaufort Sea and McMillan Pass developments. It also carried out a manpower forecasting project in conjunction with the Yukon Labour Force Development Council.

*Policy and Planning Initiatives:* Papers were prepared on employment, training and manpower delivery issues relative to the Beaufort Sea. Proposals for new comprehensive development agreements were prepared, as were materials for negotiating a new Canada-Yukon Adult Occupational Training Agreement.

### *Program Planning*

The Branch developed the Yukon Pipeline Employment Training Plan in co-operation with Adult & Continuing Education and the Department of Intergovernmental Relations. The Plan was then presented to the Yukon Advisory Council, the joint Federal-Territorial Manpower Needs Committee and others.

### *Evaluation Activities*

The Branch continued to represent the Government of Yukon on federal job creation review boards for the Local Employment Assistance Program, Canada Community Services, Canada Community Development and Summer Student Programs.

### *Industry-Labour-Government-Native Consultations*

The Branch continued to provide secretariat and research services to the Yukon Labour Force Development Council. Yukon industry, labour organizations, the Government of Yukon, the Council for Yukon Indians and federal government agencies were represented on the Council.

Certain problems arose, however, that the Council felt it could not resolve. For example, Yukon labour organizations indicated their dissatisfaction with some employers and questioned their sincerity about developing the local labour market. Accordingly, the Council, after a mail ballot, voted to disband. The Council Chairman was Mr. James Smith, Chairman of the Northern Canada Power Commission. Other means will be pursued to involve industry, labour, government and native representatives in joint planning and discussions on issues relating to the labour market.

### *Interprovincial & Federal-Provincial Activity*

The Branch was active in the Western and Northern Ministerial Advisory Teams on Manpower Planning and Manpower Training and Immigration. The Branch supported senior officials participating in Ministerial level conferences and continued to provide secrtariat services to the joint Canada-Yukon Manpower Needs Committee and the Manpower Training Needs and Research Committee.

### *Women's Bureau*

The Women's Bureau is responsible for recommending new policies in the Yukon to improve the status of women. The Bureau was transferred from the Department of Consumer & Corporate Affairs on January 1, 1982. The Women's Bureau was involved in planning Human Rights policy and represented the Government of the Yukon in the Canadian Association of Statutory Human Rights Agencies. The Co-ordinator is a member of the CAALL Sub-Committee, "Women in Employment", and represents Government of Yukon at Federal-Provincial-Territorial Status of Women meetings. The Women's Bureau started a new course for single-parent women who receive social assistance. The course was offered this year at the Yukon Vocational and Technical Training Centre. Planning was underway to establish a ministerial Yukon Advisory Council on Women's Issues.

### ***Plans for 1982-83***

During the coming year, the Department plans to complete the new Porter Creek Junior High School. In addition, the re-construction of the Old Crow School will be completed. Grade offerings in Old Crow will be expanded to Grade 10. A new school will also be built at Pelly Crossing. Work has already begun on this project. The Recreation Branch will have a recreation plan for the 1980's once the Recreation Delivery System has been reviewed.

The Adult and Continuing Education Branch and the Manpower Branch have a number of plans for 1982-83. A system will be developed to determine the ability of employers to deliver industry-based training. In addition, a system will be developed for gathering more accurate information about the supply of manpower and forecasting manpower demands. The Department will refine the Yukon Pipeline Employment Training plan and will expand the delivery of general mobile training courses to unserviced communities. A number of Resource Corps projects are planned. More Community Learning Centres will be established and the knowledge network Services will be expanded.

Finally, a two-year Business Administration program will begin in September and women's programming will continue and will stress vocational and career development.

## **Department of Tourism and Economic Development**

### *Responsibilities*

The Department of Tourism and Economic Development has three major areas of responsibility. First, it is responsible for co-ordinating the development and implementation of short, medium and long-term economic development strategies, plans and programs for the Yukon. The Department's second responsibility area is to carry out research in order to develop a comprehensive socio-economic data base adequate to meet the needs of all Yukon Government departments and the public. Finally, the Department is responsible for developing the potential of the Yukon tourism industry to the greatest extent possible by managing and administering an effective tourism marketing and development program.

Interior of Super Value store with food displays and shoppers at Qualin Mall, Whitehorse, Y.T. Photo by Pat Morrow, 1982.

### *Special Programs Branch*

***Responsibilities***

The Special Programs Branch is responsible for developing, managing and implementing the Government's economic development and energy programs. The Branch currently operates three programs through cost sharing agreements with Canada, namely the Special Agriculture and Rural Development Agreement (Special ARDA), the Conservation and Renewable Energy Demonstration Agreement (CREDA) and the Yukon Energy Conservation Incentive Program Agreement (ECIP). The Branch is also responsible for developing energy plans and policies for Yukon.

***Review 1981-82***

During 1981-82, the Special ARDA program was particularly active. During the year, 44 projects were approved with a total grant contribution of more than $1.9 million. Of these projects, 24 were commercial undertakings and accounted for $1 million of the grants. The remaining 20 projects were for primary producing and social adjustment activities and were carried out and funded through the Government of the Yukon.

Under the Conservation and Renewable Energy Demonstration Program, six projects with a total grant contribution of $127 000 were approved during the year.

The Energy Conservation Incentive Program was also active with 31 energy audits performed to the beginning of March 1982. Total first-year potential savings of $290 240 were identified. The cost of implementing the audit recommendations would be about $804 000. Total incentive grants approved were $258 000.

The Branch was also actively involved in developing an energy policy for Yukon and participated on the intergovernmental task force to develop a Northern Energy Strategy.

***Plans for 1982-83***

The Special ARDA Agreement expires March 31, 1982, and negotiations are underway to renew and revise the programs associated with it. The two energy programs will continue with possible modifications or improvements pending discussions with Energy, Mines and Resources, Canada. Work on developing a Yukon Energy Policy will continue.

The Branch will be responsible for the implementation of the Small Business Loans Fund Program.

### *Tourism Marketing Branch*

***Responsibilities***

The major responsibility of the Tourism Marketing Branch is to promote the Yukon as an internationally recognized tourist area.

***Review 1981-82***

The 1981 tourism industry in the Yukon was much improved over previous years. Border crossings, a major indicator of the number of visitors, were 14 per cent higher in 1981 than in 1980. During the 1981 calendar year 386 000 people entered the Yukon. It is estimated that visitors to the Yukon spent more than $51 million in 1981. Highway traffic increased markedly. Air traffic was slightly higher than it was in 1980. Trans-border rail traffic on the White Pass Route reversed its earlier decline, rising 6 per cent over the 1980 level.

Attendance at visitor attractions and information centres reflected the increase in the number of tourists. The number of visitors to the information centre at Dawson City remained unchanged from 1980 to 1981. However, the centres at Haines Junction and Watson Lake reported sharp increases. Registrations totalling 111,101 were up almost 24 per cent from 1980. Since 1975, the number of visitors from the United States has been declining. However, the number of visitors from Southern Canada and overseas is growing steadily. In 1981, 62.9 per cent of visitors to Yukon came from the United States; 28.2 per cent came from Southern Canada and 8.8 per cent from overseas.

The Canadian Government Office of Tourism offered significant support to Tourism Yukon. It provided marketplaces for retail travel agents and financial assistance for visiting media, tour wholesalers and travel agents. It also offered general marketing assistance. A total of 118 retail travel agents and tour operators participated in familiarization tours of Yukon. More than 40 writers, photographers and broadcasters visited Yukon to gather material to publicize the Territory in Canada, United States, Australia. France, Germany, and England. The co-operative marketing program with the State of Alaska has continued to allow the Marketing Branch to maximize exposure of Yukon's attractions, facilities and services at a minimum cost.

***Plans for 1982-83***

Marketing projects will be continued in co-operation with the Yukon Visitors Association, the Canadian Government of Tourism and the State of Alaska.

## *Economic Research and Planning*

***Responsibilities***

The Economic Research and Planning Branch, (ERP) carries out research, and develops plans and policies on all matters pertaining to the economic development of Yukon. In addition, the Branch provides a statistical information service and a research library for the Government, the private sector and the public.

The main areas of the Branch's responsibility are non-renewable resources, transportation, business development, and energy. Specifically, ERP is involved in activities such as planning for major developments that will affect Yukon (e.g., Beaufort Sea oil and gas developments and the mining activities in MacMillan Pass); preparing feasibility studies and economic forecasts; and collecting and analyzing a wide range of social and economic data for use by buisness, government and the general public.

ERP's regular surveys of Yukon's consumer prices, housing rental markets and labour force, as published in the quarterly Yukon Economic Review, are probably the most well known of its activities.

***Review of 1981-82***

In 1981-82, ERP prepared government positions on non-renewable resources, transportation, energy, and economic development strategy.

ERP worked closely with industry through the MacMillan Pass Task Force, in order to help promote communication and co-operative industry/government studies in the MacMillan Pass area. For example, a number of environmental studies and an economic study on the advantages of operating a commuter service versus locating a townsite in MacMillan Pass were cost shared. As well, a series of position papers were prepared and presented to the Task Force as a prelude to the non-renewable resource policy.

The Branch provided assistance in the preparation of a Yukon Government policy and position paper on oil and gas development in the Beaufort. It also determined the funding requirements for studies to determine how Yukoners can obtain the maximum benefit from Beaufort Sea developments.

As well, ERP prepared a series of interventions to the Canada Transport Commission reflecting the Government's support of a strong regional air network in Yukon. ERP intervened in Pacific Western's application to drop the Whitehorse-Yellowknife route; Trans North Air's application to extend its services to Inuvik, Yellowknife, Tischu Valley and Alaska; and Air North's application to fly from Alaska to Yukon.

Finally, ERP provided advice and assistance to the Yukon Government in its negotition of a $1 million loan to the White Pass and Yukon Route Railway in April 1981. The loan reflects Government's recognition of the fundamental importance of the railway to the economy.

*Research and Planning*

In 1981-82, the ERP carried out a variety of research projects. These included:

1. Study on the Impact of Higher Mortgate Rates on Yukon Households;
2. Economic Forecast for Yukon 1981-1991;
3. Economic potential of Faro;
4. Background paper on a proposal for a modified Business Development Assistance Program in Yukon;
5. Background paper on a Canada/Yukon Comprehensive Development Agreement;
6. Background paper on a Canada/Yukon MacMillan Pass Planning Agreement;
7. Special report on the Spatial Price Survey 1981; and
8. Study of the issues relating to the use of water for placer mining.

In addition, ERP agreed to prepare the necessary legislative and implementation procedures for transferring the Small Business Loans Fund from DIAND to Yukon. This fund will form the basis for the first universally applicable business assistance program undertaken by Yukon.

*Data Development and Dissemination*

During 1981-82, ERP continued to expand the Yukon Economic Review. The Tables and publication covers were completely redesigned to provide a simpler, but more consistent and effective presentation. As well, the Spatial Price Survey was further expanded and improved and the Branch provided assistance to the Yukon Food Price Inquiry as a result of the spatial survey.

In an effort to assist Yukon's business community, ERP carried out a project to design a Yukon Business Directory. The purpose of the Directory is to assist companies involved in major projects to buy their supplies from Yukon businessmen. The Directory, which is expected to be finished in 1982, could greatly benefit Yukon businesses, that might otherwise be overlooked by the large companies, which have traditionally used southern suppliers.

In addition to the above activities, the Branch handles more than 1000 requests each year for economic information from businesses, consultants and researchers. To aid its staff in responding to these requests (and to facilitate its own research), the Branch maintains a well-stocked research library.

***Plans for 1982-83***

In 1982-83, ERP intends to expand its data collection and dissemination activities. The Branch will produce a new Yukon statistical review during the year, and a computerized business directory is expected to be in operation. ERP will attempt to make more data available to new businesses by developing a market information booklet and a Yukon data sheet.

A Yukon mineral policy will be presented for public comment during the year and increased emphasis will be placed on the development of medium and smaller mining projects to balance large scale projects. Nonetheless, the larger projects will be a major thrust with emphasis being placed on the MacMillan Pass Task Force.

Research efforts will be increased. For example, the Branch will make more use of computer modelling and simulation. It will also conduct a benefit cost analysis of the MacMillan Pass Project, assess the economics of truck transportation and increase its work in assessing the potential economic benefits for Yukon from projects in the Beaufort Sea.

### *Tourism Planning and Development*

***Responsibilities***

The major responsibility of the Tourism Planning and Development Branch is to develop a competitive international tourism product that will generate economic and social benefits for Yukoners.

***Review 1981-82***

During 1981, about $2 million in tourism-related construction in the Yukon was reported. This activity indicates that the tourist industry is continuing to grow. The Yukon tourist industry received a major boost in April 1980 from the Canada-Yukon Tourism Agreement (CYTA). This is a two-year, $6 million federal-territorial agreement for tourism development. The Yukon's contribution is $900 thousand, with the balance coming from the Department of Regional Industrial Expansion (formerly DREE) and the Department of Indian Affairs and Northern Development. Of the $6 million allocated under the CYTA, $5.7 million was spent on tourism development and $300 000 on research and planning. The Agreement will help to smooth the peaks and valleys of the traditional "boom or bust" pattern of Yukon's resource-based economy. At the same time, the CYTA provides for protecting and enhancing the historical and wilderness aspects that make Yukon unique. The Agreement was recently extended for a third year.

The most visible undertaking under the CYTA has been the construction of the Whitehorse Cross-Country Ski Chalet, which hosted the 1981 World Cup and North American Cross Country Ski Championships in March 1981. This project was a step toward diversifying Yukon's appeal to tourists and attracting visitors in periods other than the peak travel season in summer.

The Kluane region attracted international attention last summer. On August 2, 1980, Kluane National Park and the St. Elias-Wrangell Mountain Ranges were designated World Heritage sites. Both sites are expected to attract many tourists in 1982 and to stimulate more tourist interest in, and enjoyment of Yukon's unique and varied wilderness areas.

As part of the ever-increasing importance of this region, the Tourism Planning and Development Branch is developing a Kluane regional tourism plan. In 1981, the Branch carried out basic research in preparation for developing the plan. Public input and finalization are expected in mid-1982.

In the private sector, Dawson's Downtown Hotel was built to replace the old hotel, which was destroyed by fire a few years ago. The new hotel will be opened for the 1982 tourist season and will include a restaurant, lounge and 35 units.

The Klondike Visitors Association, based in Dawson City, undertook continued studies for the expansion of the Diamond Tooth Gertie's Gambling Hall operation (the source of much of its revenue). Restoration and expansion are expected for 1982. In addition, grants were made to various organizations in Dawson to provide financial assistance to the community's development, particularly for downtown improvements to Dawson City. Grants also went to many individuals for placing facades on residences and businesses.

One research study of particular interest undertaken in 1981 was Tourism Yukon's "Coupon Conversion Study". This study was designed to follow-up on consumer enquiries for information about visiting Yukon, or including it as part of a trip to or from Alaska. The 1981 study is a much-expanded version of previous annual studies, necessitated in part by major shifts in the previous season's marketing campaigns. Results from the study indicate that over 17 per cent of 51 000 Canadian and U.S. residents who requested and received Yukon promotional literature actually visited Yukon in 1981. In addition, nearly 10 per cent of 280 000 people who asked for Yukon-Alaska booklets also visited Yukon. In effect, this literature encouraged a total of 38 000 people to visit Yukon in 1981. These travellers spent nearly $26 million on goods and services in Yukon, a significant contribution to the Yukon tourism industry's total earnings of about $51 million. Results of this study are now providing guidance to Tourism Yukon in refining its 1982 marketing activities in preparation for 1983.

***Plans for 1982-83***

A series of projects that were started under the Canada-Yukon Tourism Agreement will be continued during the coming year, and new projects currently planned will begin during this period. Research and planning will be carried out for longer-term development programs and there will be more emphasis on economic development and marketing within the tourism industry.

## Department of Intergovernmental Relations

***Responsibilities***

In April of 1981, the Department of Intergovernmental Relations was created by amalgamating the existing Pipeline Branch, the Land Claims Secretariat and the Directorate of Intergovernmental Affairs. The Department was formed to better co-ordinate the efforts of the various Yukon Government departments, and to provide more effective co-ordination between the Yukon and other levels of government. The Department maintains an Ottawa office, staffed by an Associate Deputy Minister.

The Department is currently responsible for intergovernmental relations and for internal policy analysis. It also continues to co-ordinate all Yukon Government Alaska Highway Natural Gas Pipeline and Beaufort Sea activities, and is responsible for the Emergency Measures Office.

***Review 1981-82***

*Pipeline Branch*
During the past year, the Branch has continued to monitor a variety of aspects concerning the Alaska Highway Natural Gas Pipeline. For example, it reviewed and approved the final drafts of the environmental and socio-economic terms and conditions governing construction of the pipeline. In addition, the Department has reviewed project plans resulting from the terms and conditions; most of which are expected to be approved in 1982. These plans relate to areas such as manpower, transportation and business opportunities.

The Department also monitored the land use permits issued for geotechnical drilling and testing programs, environmental concerns regarding granular material allocation, and the use of gravel pits for material storage. Land use along the pipeline route was also verified by reviewing cadastral surveys.

The Branch has negotiated several agreements during the year. These include an administrative agreement with the Northern Pipeline Agency that formalizes the consultative process between it and the Yukon Government. Cabinet has approved the agreement which will be signed in 1982. In addition, an easement agreement for the pipeline right-of-way was prepared in consultation with both the Northern Pipeline Agency and the Department of Indian Affairs and Northern Development. It is particularly advantageous to the Yukon because, unlike other pipeline right-of-way agreements, rentals paid will be reviewed every five years. The Department also negotiated an agreement with Foothills Pipelines Ltd. in which the Company agrees to pay all costs that the Department incurs that are directly related to the pipeline project.

Two departmental projects were of long-term importance to the Yukon. The first of these was the completion of draft legislation covering the heritage fund. It will be brought forward during the 1982 Spring Session of the Yukon Legislature. The second project involved the continued development of plans for the eventual distribution of natural gas to Yukon communities.

*Beaufort Sea*
In 1981, the Department assumed responsibility for monitoring Beaufort Sea development. In carrying out this responsibility, the Department participated on the federal Beaufort Sea Task Force and reviewed and commented on the guidelines developed by the Beaufort Environmental Assessment Review Panel. The Yukon has two representatives on this Panel.

The Department organized several meetings between Beaufort proponents and senior government officials and co-ordinated the preparations of the major policy statement "Beaufort Development: The Yukon Perspective". The Policy statement resulted from the work of an internal Yukon Government Beaufort Sea Task Force, which the Department chairs.

*Ottawa Office*
Since it opened during the summer of 1981, the Ottawa office has been acting as a "listening post" for the Yukon Government by attending intergovernmental, parliamentary and senate committee meetings, and through daily contact with federal government public servants.

The office has also acted as a point of contact for anyone who wants information about the Yukon.

In 1982-83, the office will continue with these activities.

*Intergovernmental Relations Branch*
During the year, the Branch took part in discussions on a wide range of topics having inter- and intra-governmental implications. Specifically, the Branch represented the Yukon Government on the National Energy Supply Allocation Board; it participated on the Federal/Provincial/Territorial Consultative Committee on Government Regulation, the Shakwak Review Committee, the Senior Policy Committee on Northern Development and the National Environmental Emergency Team. It was also involved in developing the emergency measures and legislation that would be required in the event of national petroleum shortages.

The Branch was also involved in assessing a number of policies proposed by other Yukon Government Departments. For example, it participated in negotiating a comprehensive Flood Damage Reduction Agreement and a Waste Heat Agreement between the Northern Canada Power Commission and the Yukon Government.

The protocol section co-ordinated a number of diplomatic visits by foreign and other officials to the Yukon and participated in several ceremonies for a number of special events. Representatives of the Department also arranged and participated in a number of Joint Alaska/Yukon/British Columbia meetings.

Finally the Branch provided secretarial services to the Federal Interdepartmental Co-ordinating Committee throughout the year.

*Emergency Measures Office*
During the 1981-82 fiscal year, EMO responded to local emergencies at Carcross (flooding), Old Crow (power loss due to fire), and potential flooding conditions at Rock Creek and Mayo.

The Office arranged with Emergency Planning Canada (EPC) to acquire communications equipment on a cost-shared basis. This equipment will considerably enhance the Office's ability to respond to emergency situations. It also participated in a specialized emergency training program sponsored by EPC. Candidates from various communities throughout Yukon attended the course.

The reorganization of EMO was started. This restructuring will allow EMO to develop joint emergency planning and response procedures with other levels of government in the Yukon. Territorial legislation was amended to reflect a broader awareness at the municipal and Territorial level of the need to develop the ability to respond to emergencies.

***Plans for 1982-83***
The Department will continue to monitor the pipeline project. This activity will include approval of all pipeline plans and will involve the development of proposals for dealing with the effects of the pipeline. The Department will concentrate on developing a pipeline manpower training program and assessing all the environmental aspects of construction planning. Negotiations will also take place on mechanisms for recovering the cost of providing the transportation infrastructure necessitated by the project.

Once Cabinet approves the project, a major task for the Department will be to prepare a detailed feasibility study for natural gas distribution.

In 1982, the Department's involvement with Beaufort-related activities will consist of preparing several supplementary position papers that will more clearly enunciate the Yukon Government's policy on a number of related issues. It will also increase the number of meetings between industry and government to determine common goals and develop methods for achieving them. Of particular interest will be northern business opportunities, employment and land use.

The Beaufort Sea Environmental Impact Statement is scheduled to be released in June 1982; the Department will be spending a great deal of time reviewing and commenting on its contents.

Finally, the Department will be expanding its internal policy review and assessment functions to promote greater consistency among the Yukon Government's planning activities. The Department will also initiate or take part in intergovernmental discussions on a wide range of issues, such as resource revenue sharing, offshore jurisdiction and land use planning.

### Land Claims Secretariat

***Responsibilities***

The Land Claims Secretariat is a branch of the Department of Intergovernmental Relations. It is responsible for promoting the settlement of native land claims and the development of responsible government in the Yukon.

***Review 1981-82***

Intensive negotiation of Yukon Indian Land Claims was conducted throughout 1981 and is continuing in 1982. Substantial progress has been made. As of February 1982, the Secretariat had reached sixteen sub-agreements covering a broad range of settlement issues. The details of four sub-agreements involving Elders' benefits, hunting, trapping and fishing have been released to the general public.

Other sub-agreements have been reached on such matters as eligibility, land selection and tenure, land use planning and environmental assessment, upgrading municipal utilities and service, housing, education, health care, hospital services and social services. The parties are now negotiating land selection and the form of local government for each of the twelve Yukon Indian Bands. One band has completed its selection, while two others are working to complete this process. Certain issues still remain outstanding, such as taxation, resource revenue sharing and financial compensation.

Once sub-agreements have been negotiated for each issue, they will be collated, amended if necessary and used as the basis for a broad Agreement in Principle. The Agreement in Principle will be one of the most comprehensive yet achieved in Canada and should considerably reduce the time required to reach a final agreement.

In contrast, COPE Claim negotiations have stagnated. Following the letter of instruction of December 24, 1980, the Minister of Indian Affairs and Northern Development suggested a brief "cooling off" period before resuming talks. In February 1981, however, COPE initiated a media campaign charging that the federal government had been negotiating in bad faith.

On April 30, 1981, Senator Steuart, the federal negotiator, advised the Government of Yukon that the federal government was preparing a proposal which would consider the terms of both the COPE Agreement in Principle and the Yukon Government's *Northern Yukon Resource Management Model*. Subsequently, on May 20, 1981, Senator Steuart forwarded a discussion paper to the Yukon Government outlining proposals for implementing Section 12 of the COPE Agreement in Principle. He expressed the view that the discussion paper would serve as a catalyst for the resumption of negotiations. The Government of Yukon viewed the new federal proposal as being even less acceptable than the original COPE Agreement in Principle. Similarly, COPE found the proposal unacceptable as it deviated somewhat from their agreement. Consequently, negotiations have not been resumed.

Throughout 1981, the Land Claims Secretariat also carried out constitutional research in relation to developing Yukon government positions on the repatriation of the Canadian constitution.

***Plans for 1982-83***

The Land Claims Secretariat will continue to participate in native land claim negotiations and undertake further land claims and constitutional research.

### Department of Municipal & Community Affairs

*Municipal Services Branch*

***Responsibilities***

The Branch fosters the development of local government in Yukon communities and provides a full range of municipal services, including guidance to municipal governments, orderly community planning and land development.

***Review 1981-82***

The implementation of the new Municipal Ordinance, which the Legislative Assembly had passed in the Fall 1980 Session, was deferred until September 1982, as recommended by a Municipal Incorporation Inquiry Board. A new Municipal Finance Ordinance was passed in the Spring 1981 Session, then amended slightly at the Fall 1981 Session to ensure that no community would suffer financially as a result of the delay in implementing the Municipal Ordinance. A Municipal Capital Expenditures Ordinance, designed to replace the Community Assistance Ordinance, was introduced at the Fall 1981 Session but was not tabled until the Spring 1982 Session to provide an opportunity for public input.

Major projects for the year included: the Carmacks Swimming Pool (in conjunction with Resource Corps); completion of the Dawson Water and Sewer System and the construction of the Mayo enclosed Skating Rink, Public Works garage and the Old Crow Skating Rink. The Haines Junction Sewage Lagoon and Mayo Administration projects were also started. Detailed engineering work was carried out on a number of other projects so that construction can begin in the next fiscal year.

***Plans for 1982-83***
Implementation of new legislation will occur in 1982. Major capital projects that are anticipated include: completion of Haines Junction Lagoon and Mayo Administration Building, upgrading the Mayo Water Supply, the Teslin and Watson Lake Recreation Complexes, the Watson Lake Sewage Forcemain, and boring a community well in Old Crow. Work on the Watson Lake Sewage Lagoon will proceed.

*Lands Branch*

***Responsibilities***
The Lands Branch is responsible for the administration and management of lands under the control of the Yukon Government and for the orderly sale and leasing of community lands.

***Review 1981-82***
Approximately 170 sales agreements were signed with individuals and builders. There were over 100 leases in effect for such uses as recreation and agriculture.

***Plans for 1982-83***
The Lands Branch will be concentrating more on the management of quarrying operations and of forests, particularly with respect to fuel wood. However, the Branch's principal activity will continue to be the streamlining of land administration procedures. The Lands Branch expects that sales of residential land will be slow in 1982-83. The federally-operated recreational cottage program will be transferred to the Branch during the fiscal year. New rural residential programs and agricultural programs will be started during the year.

*Assessment Services Branch*

***Responsibilities***
The Branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon Government. It also defends assessments at Assessment Review and Appeal Board Hearings, assists the Territorial tax collector and provides a real property appraisal service to other government departments. Assessment values now represent current property values. The accompanying chart compares 1981 and 1982 assessment values.

| *Location* | *1980-81 Assessment Tax Year* | *1981-82 Assessment Tax Year* |
|---|---|---|
| Whitehorse | $498 050 000 | $553 455 720 |
| Dawson City | 19 442 000 | 20 095 550 |
| Faro | 36 940 000 | 46 706 200 |
| Other Areas | 177 356 000 | 259 163 528 |

*Protective Services Branch*

***Responsibilities***
Protective Services is responsible for the following three functions:

1. *Building Inspection* — It inspects buildings to monitor the extent to which they conform to the Building Standards Ordinance, Area Development Ordinance, Electrical Protection Ordinance, Fire Prevention Ordinance, Boilers & Pressure Vessels Ordinance, Elevator & Fixed Conveyances Ordinance and the Gasoline Handling Ordinance.

2. *Fire Training and Investigation* — The Fire Marshal's Office (part of Protective Services) is responsible for seeing that all volunteer fire departments are properly equipped and trained to fight fires that could take place in their communities. Regular practice sessions are held by local departments to practice methods taught by the F.M.O.

The Branch investigates all fires occurring outside the Whitehorse City limits.

3. *Ambulance Service* — The Branch also operates the Yukon Ambulance Service. The Ambulance Inspector from Protective Services inspects ambulance operations and oversees the training of volunteer attendants in basic first aid.

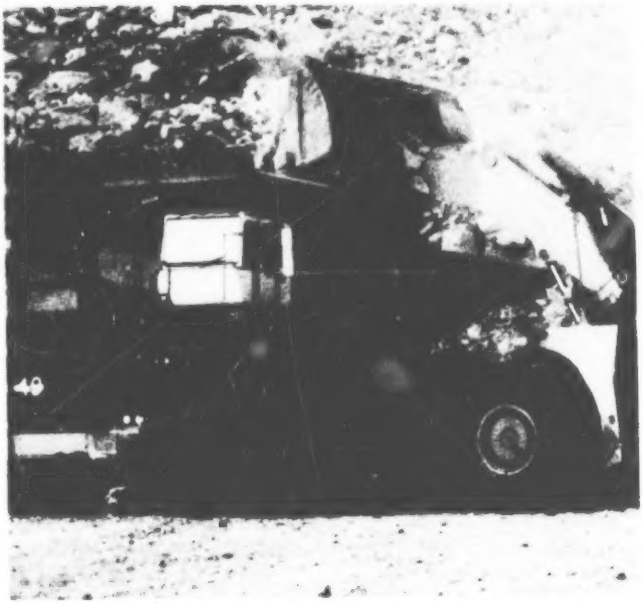
*Statistics and Activities*
Value of construction totalled more than $15.5 million during 1981. In 1981, approximately $5 million of property was destroyed by fire. In the same year, three deaths were attributed to fire. There are 14 volunteer fire departments and approximately 85 volunteer fire fighters, for which this Branch provides training and other back-up services. The ambulance operation includes 13 full time personnel, plus 12 ambulance stations in various areas of Yukon, manned by approximately 150 volunteers.

**Department of Highways & Public Works**

***Responsibilities***
The Department is responsible for maintaining and improving transportation systems to promote economic development in the Yukon, constructing and maintaining buildings to an approved standard and for providing engineering services to government departments.

***Responsibilities of Branches***
The Highways and Transportation Branch consists of four Sections. These are: Highway Maintenance, Highway Construction, Mechanical Operations and Airports Management. Airports Management, however, is not responsible for the two Arctic "A" airports in the Yukon at Whitehorse and at Watson Lake. These are the responsibility of the federal Department of Transport (DOT).

The Public Works Branch operates two Sections: Building Maintenance and Building Construction. Building Maintenance is responsible for maintaining all buildings owned by the Yukon Government (except those operated by the Yukon Housing Corporation). The Building Construction section is responsible for all Government of Yukon building construction, again excluding buildings for the Yukon Housing Corporation.



Heavy equipment, Cyprus Anvil Mine, Faro, Y.T. Photo by Pat Morrow, 1982.

The Municipal Engineering Branch is responsible for all water and sewer construction in the Yukon (except that carried out directly by the municipalities) and for street construction and land development projects. The Department of Municipal and Community Affairs funds all work carried out by this Branch.

The Administrative Branch provides central administrative services such as cost control and accounting, preparing estimates, administering contracts, personnel and other central administrative functions.

***Review 1981-82***

Two major changes took place during the year. The first was the transfer of all "Property Management" functions to the Department of Government Services. The second was the reorganization of the Department's eight Sections into four Branches as noted above.

The Highways and Transportation Branch maintained 4 419.4 km of highways and roads, applied calcium chloride dust treatment to 1 134 km and extended bituminous surface treatment by 236 km. The Dawson Ferry carried 35 376 vehicles and 114 444 passengers over the Yukon River at Dawson City, compared with 38 013 vehicles and 126 479 passengers for the previous year. The cable barge at the Ross River Settlement carried 5 511 vehicles across the Pelly River, compared with 4 443 vehicles for 1980-81. 32 km of the Klondike Highway between the Alaska Highway and Carmacks were reconstructed and a major program to replace drainage structures on the South Canol Road was continued. Vehicle Weighing Stations were operated at Watson Lake, Whitehorse and Haines Junction. The Mechanical Section of this Branch maintained and repaired approximately 1 500 pieces of equipment. Maintenance of 10 Arctic "B" and "C" Airports was carried out with DOT federal funding and included the operation of airport facilities at Old Crow and at Faro. The Department also maintained 20 territorial airstrips, mainly for emergency purposes.

With a complement of 28 tradesmen, the Public Works Branch carried out preventative maintenance and emergency repairs for 186 buildings. Building construction started on the Junior Secondary School at Porter Creek, a two-year project. The Branch completed the Carmacks School Addition and a number of other projects, such as new Staff Quarters for the Klondike Camp on the Dempster Highway and Renovations to Christ The King High School in Whitehorse. The Faro School addition, which was started in 1980 was also completed.

The Municipal Engineering Branch undertook a number of small projects last year including items such as continuation of the Old Crow River Bank Stabilization, small land development projects and repairs to the Dawson sewer system.

***Plans for 1982-83***

All existing "Operation & Maintenance" programs such as highway maintenance, building maintenance, repair and upkeep of equipment and maintenance and operation of airports and airstrips will continue. It is estimated that 975 km of highways will receive Calcium Chloride applications for dust control and it is planned to apply bituminous surface treatment to 272 km of highways as a dust control measure and also as a stage construction for eventual paving.

The new Passenger/Cargo Shelter for the airport at Ross River will be operated and staff will be hired to provide Observer/Communicator services at that location in addition to the service now being provided at Old Crow and at Faro. Provided DOT funding is made available, the Branch plans to construct Passenger/Cargo Shelters at Beaver Creek and at Haines Junction, and to staff these installations with Observer/Communicators.

The highway reconstruction program on the Klondike Highway between the Alaska Highway and Carmacks will continue. The first year of a two-year project to reconstruct the Faro Access Road will start.

Building construction started in 1981 will continue. A new Administration Building will be constructed in Mayo, a new school at Pelly Crossing, a Staff Quarters Building at Tuchitua Highway Maintenance Camp and a number of minor building construction jobs will be carried out. It is proposed to build a sewage lagoon, a forcemain and a lift station in Haines Junction. The Department will also carry out a number of minor municipal engineering projects including small Land Development jobs and community street surfacing.

## Department of Health & Human Resources

***Responsibilities***
The Department of Health and Human Resources is responsible for planning, developing and providing comprehensive health and social programs and services designed to improve the health and well-being of individuals, families and communities. The Department also funds community agencies under Government of Yukon Contributions Agreements, which are complementary to Human Resources programs and services. Within the Department, the Administrative, Budget and Financial Planning Unit and the Research and Training Unit provide support services. The implementation of a management information system for Human Resources has provided an automated index of the Department's clients and their involvement in any of 13 departmental programs.

### *Child Welfare Branch*

***Responsibilities***
Legislation administered by this Branch includes the Child Welfare Ordinance, the Day Care Ordinance and the Juvenile Delinquents Act. Programs delivered include juvenile probation, family services, day care, residential facilities for youth, services for children in care including adoptive homes, group homes, foster homes and out-of-Territory placements.

***Review 1981-82***
In 1981-82 the Branch:
- established the Day Care Subsidy Program effective July 1, 1981;
- instituted Departmental Child Abuse Protocol;
- implemented a special program designed to help permanent wards to live independently;
- held a successful promotional week for foster parents in October 1981;
- expanded social network groups for adolescents in Whitehorse and some outlying communities;
- completed the development of Juvenile Probation and Court Manuals;
- established two new residential facilities for juveniles; and
- formed a teen development association.

***Plans for 1982-83***
Plans for this period include:
- a review of amendments to the Child Welfare Ordinance;
- a review of amendments to the Corrections Ordinance pertaining to juveniles;
- developing planning strategies in relation to the new Young Offenders Act;
- promoting of public awareness of the need to report instances of child abuse; and
- the development and maintenance of an information package for potential day care operators.

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Whitehorse Elementary School, Whitehorse, Y.T. Photo by Pat Morrow, 1982.

### *Whitehorse Region*

***Responsibilities***
Legislation administered by the Whitehorse Region includes the Social Assistance Ordinance, Rehabilitation Services Ordinance and Pioneer Utility Grant Ordinance. Programs delivered include social assistance, child protection and family services, services to seniors, community development, vocational rehabilitation services and the Pioneer Utility Grant.

***Review 1981-82***
During 1981-82 Whitehorse Region:
- allocated $10 000 for the International Year of Disabled Persons to fund special projects;
- implemented a "Handy Bus" transportation system for individuals who are unable to use the regular transit systems due to age or disability;
- expanded the public service on-the-job training program for disabled persons;
- established the Headway House Group Home for disabled persons;
- provided a $100 000 Government of Yukon capital grant to the Yukon Rehabilitation Centre;
- worked to develop the Special Employment Resources Services; and
- increased the Pioneer Utility Grant for seniors from $300 to $360 per year.

***Plans for 1982-83***
The Region plans to:
- review programs aimed at senior citizens to identify gaps and augment other program initiatives in conjunction with the United Nations World Assembly on Aging year;
- carry out a study to examine current policies on special needs in social assistance; and
- participate in a Federal/Provincial study of a national insurance scheme for the disabled.

*Regional Services & Alcohol and Drugs Branch*

***Responsibilities***
The Branch operates under legislation that includes the Child Welfare Ordinance, the Social Assistance Ordinance and the Juvenile Delinquents Act. Programs and services that the Branch delivers are child protection, juvenile probation, foster care, social assistance and family services. It also delivers alcohol and drug counselling, treatment, prevention/education, employee assistance programs and community alcohol worker programs.

***Review 1981-82***
In 1981-82 the Branch's activities included:
- providing preventive services for high-risk youth populations;
- staff involvement in occupational alcoholism programs, medical education programs and criminal justice training programs;
- developing and distributing kits explaining the danger of alcohol to the foetus;
- developing the impaired drivers program; and
- holding a conference on Alcohol and Drugs in conjunction with a Native Health Conference.

***Plans for 1982-83***
The Branch plans to:
- promote the industrial alcohol awareness campaign;
- review and evaluate outpatient treatment and the training needs of counsellors;
- support efforts to involve youth in activities related to preventing the abuse of alcohol; and
- encourage community involvement in the development of a crisis intervention service.

*Health Services*

***Responsibilities***
This Branch administers legislation including Yukon Health Care Insurance Plans and the Medical Travel Ordinance, Cancer Ordinance and Mental Health Ordinance. It delivers various programs such as the Pharmacare, Vital Statistics and Family Life Programs as well as the Speech Pathology and Audiology programs.

***Review 1981-82***
In this period, the Branch:
- implemented a Pharmacare plan providing prescription drugs for Yukon senior citizens;
- developed guidelines for medical travel, Pharmacare, Cancer Ordinance plastic surgery benefits;
- reviewed the Mental Health Ordinance and committal procedures;
- developed a co-ordinating committee designed to facilitate information exchange, planning and financial control by Medical Services Branch and Health Services Branch; and
- recruited a full-time clinical psychiatrist for practice in Yukon.

***Plans for 1982-83***
Plans for 1982-83 include:
- the review and assessment of administrative and computer systems for use in health administration;
- preparation of new legislation for the Yukon Health Care Plan; and
- the control of acute care costs and re-allocation of these resources to preventive health promotional activities.

**Department of Justice**

***Responsibilities***
This Department is responsible for administering justice throughout Yukon and for developing the systems and programs required to carry out that responsibility. Three Branches (Legal Services, Court Services and Corrections Services) administer various programs, including the Courtworkers Program, Legal Aid, the Police Services Contract and the Special Native Constable Program. Responsibility for adjudication of claims under the Compensation to Victims of Criminal Injury Program has been transferred to the Workers Compensation Board from the Supreme Court, but payment of awards remains a function of this Department.

The Legal Services Branch provides legal advice and services to the Commissioner, members of the Legislative Assembly, government departments and agencies. In addition the Branch is responsible for drafting Acts and regulations, prosecutions under Territorial Acts and court appearances on behalf of the Government and its officers. The Land Titles Office is part of this Branch and administers the Canada Land Titles Act in the Yukon. The third program under Legal Services is the office of the Public Administrator/Chief Coroner. The Public Administrator looks after the estates of deceased persons and persons declared mentally incompetent. The Chief Coroner is responsible for administering the Coroner's Ordinance and ensuring that coroners are available throughout Yukon to carry out investigations of sudden death.

The Court Services Branch includes the Supreme Court, Court of Appeal, Territorial Court and the Sheriff's Office. Justice of the Peace Courts are held in most outlying areas and the Territorial Court travels to rural communities as required. The court system provides small claims officials and lay juvenile judges. Prosecution of Criminal Code and federal offences is the responsibility of The Crown Prosecutor's Office, which the Federal Department of Justice maintains in Whitehorse. The Sheriff's responsibility is to enforce the civil law throughout Yukon.

Corrections Services consists of two programs, Institutional Corrections (Whitehorse Correctional Centre) and Community Corrections (Probation Services). The Centre is a medium-security institution providing custody and care of male and female prisoners serving up to two years-less-a-day. The Centre is also used to detain persons remanded for trial or sentencing and those awaiting immigration, deportation and appeal hearings. The Centre is also involved with prisoners awaiting transfer to federal or mental institutions.

The Centre operates a number of programs designed to facilitate the return of prisoners to society. Probation Services supervises offenders and prepares reports ordered by the court. Probation Workers travel from offices in Whitehorse, Watson Lake and Mayo to provide services to all other areas, as required. The emphasis is on keeping offenders out of institutions, and the community work-service program started in Whitehorse in 1979, and extended to Watson Lake and Mayo the following year, is now available in most rural communities as well.

### *Review 1981-82*

*Land Titles*

| | |
|---|---|
| Certificates of Title | 1 062 |
| Certificates of Search | 1 527 |
| General Register Certificates | 420 |
| Certificates of Change | 560 |
| Plans | 72 |
| Document Registrations | 3 641 |

*Public Administrator*

| | |
|---|---|
| Files Opened | 70 |
| Current Open Files | 271 |

*Chief Coroner*

| | |
|---|---|
| *Manner of Death* | |
| Natural Causes | 92 |
| Accidental | 30 |
| Motor Vehicle Accidents | 20 |
| Suicide | 5 |
| Homicide | 1 |
| Missing Persons | 1 |
| Other | 1 |
| | 150 |

*Supreme Court*

| | |
|---|---|
| Criminal/Civil Case Load | 725 |
| Divorce Case Load | 148 |

*Territorial Court*

| | |
|---|---|
| Adult Criminal Cases (Whitehorse) | 6 650 |
| Juvenile | 325 |
| Small Claims | 420 |

*Legal Aid*

| | |
|---|---|
| Applications Accepted — Civil | 77 |
| — Criminal | 502 |

*Probation Services*

| | |
|---|---|
| Assigned New Cases | 804 |
| Number of Court Reports | 352 |
| Days Spent in Rural Field Service | 187 |
| Average Number of Cases under Supervision | 465 |

*Whitehorse Correction Centre*

| | |
|---|---|
| Number of Inmate Days | 23 707 |
| Average Number of Inmates | 65 |
| Work Releases Granted to Inmates | 17 |
| Hours of Community Work by Inmates | 21 396 |
| Hours of Institutional Work by Inmates | 50 999 |

### *Plans for 1982-83*

An extensive renovation and reorganization of the facilities in the Corrections Centre will be carried out, which is expected to make the Centre eligible for accreditation by the American Corrections Standards Association. The Probation Services is continuing to develop programs that will enable offenders to be ordered to perform community service work in lieu of paying fines or being imprisoned.

The Department will carry out the next phase of the development of the Statistics and Management Information System. It is intended that the System will be the Canadian model for smaller jurisdictions and will work in conjunction with the Justice Information Centre established last year in Ottawa. Efforts are continuing to develop Human Rights legislation and a program of education, and to establish a Human Rights Commission. The Department will continue its efforts to fund the construction of a new Court House and another building to consolidate the many components of the Justice system now housed in a number of locations. The Department will continue working toward making Yukon laws uniform with those of other jurisdictions, especially those laws governing the commercial and social rights and duties of the public. Finally, studies related to Victims of Crime will be started in anticipation of future programs in this area.

## Public Service Commission

### *Responsibilities*

The Public Service Commission is the agent of the Yukon Government for all matters related to the staff of the public service, and the determination and administration of terms and conditions of employment. It carries out its responsibilities within the statutory framework provided by the Public Service Commission Ordinance and Regulations and the Public Service Staff Relations Ordinance. Appointments are made on the basis of merit; the terms and conditions of employment for unionized employees are governed by the collective agreement entered into by the Government of Yukon and the Public Service Alliance of Canada.

The Public Service Commission's departmental objective is defined as follows:

To provide for the recruitment of public servants, job evaluation, pay and benefits administration, negotiation and administration of collective agreements, staff establishment control, organization analysis, employee training and development, appraisal, and employee documentation and records administration.

### *Recruitment and Training Branch*

***Responsibilities***
To provide for the recruitment, selection, appointment and promotion of public servants; to fund training programs carried out by or on behalf of the Government of the Yukon; to reimburse employees for costs of tuition and travel incurred as a result of studies undertaken at approved educational and training institutions; to provide for the funding of training positions within the government service for affirmative action purposes e.g., for women and the disabled; to provide on-the-job training assignments for trainees funded by external agencies.

***Review 1981-82***
During the 1981-82 fiscal year, the following projections applied. Final figures were not available at the time this report was compiled.

*Recruitment*

| | |
|---|---|
| Appointments from outside Public Service: | |
| Permanent | 205 |
| Casual (including contract) | 1 391 |
| In-service Appointments: | |
| Promotions | 65 |
| Transfers | 80 |
| Total Appointments | 1 741 |
| Advertised Competitions | 296 |
| Appointments from referral by Canada Employment Centre (Entry Level) | 459 |
| Appointments | |
| Made: From Within Yukon | 315 |
| From Outside Yukon | 35 |
| *Training* | |
| Short Courses Conducted | 49 |
| Individuals Attending Courses | 595 |
| On-the-job Training Assignments | 36 |

### *Classification and Employee Relations Branch*

***Responsibilities***
To provide for the development and administration of terms and conditions of employment for employees of Government of Yukon.

***Review 1981-82***
The following volume of transactions for 1981-82 are of interest:

| | |
|---|---|
| Proposals reviewed (class regrading and job reclassification) | 336 |
| Departmental Organization Analysis | 6 |
| Number of Employee Grievances or Complaints Investigated | 30 |
| Meetings Held With Union Representatives | 25 |
| Formal Hearings Before an Adjudicator or Arbitrator | 4 |

Considerable effort was expended on developing and implementing the new management classification and pay plan.

### *Employee Benefits Branch*

***Responsibilities***
To provide for the establishment, maintenance and control of employee documentation and personnel records, and to advise employees in relation to pay and benefits.

***Review 1981-82***
In 1981-82, branch personnel handled the following types and numbers of transactions (in rounded figures): Document Transactions 36 000; Pay Rate Adjustments 3 500; Interviews/Telephone Calls 60 000.

During the 1981-82 fiscal year, the Commission transferred the preparation of pay input and documentation of casual employees to departments. Commission staff held seminars to encourage a smooth transfer of these responsibilities and to familiarize departmental personnel with them. Extensive work has been done with representatives of the Department of Finance and Computer Services Branch to develop and implement a new computerized payroll/personnel package.

***Plans for 1982-83***
The Department expects to continue applying the recently introduced "Underfill" Policy. Under the Policy, employees and other local candidates may be certified for appointment in instances where they do not meet all of the formal requirements for appointment, if, in the judgement of the selection board, they are likely to meet these requirements within twelve months. Such appointments are made only, where, in a particular competition, no candidate is certified as being fully qualified, or where no qualified candidate will accept appointment. The main purposes of the policy are to provide better opportunities for career development and to reduce hiring from outside the Yukon. Further meetings are scheduled to finalize and implement a Job Bridging Program. This Program is intended to provide opportunities for clerical staff to be promoted into administrative and semi-professional areas.

An advisory committee is developing procedures, information packages and training sessions for an Employee Assistance Program. The Program is intended to expand the existing Employees' Alcoholism and Drug Program by providing confidential assistance to employees at all levels whose performance at work is being adversely affected because of personal problems. Employees and, if required, family members will be referred to a private agency for counselling. The Government of Yukon will pay for these services.

Because of financial constraints, funding by the Public Service Commission for the On-the-job Training Program will be decreased for 1982-83. Attempts will be made to maintain the Program by requesting financial assistance from sponsoring departments. Emphasis will be placed on developing a number of internal training packages geared to dealing with particular recurring problems and specific classes of employment. As well, the Department will continue emphasizing the development of other local training resources. In doing so, the objective will be to make training relate more closely to needs and to reduce the amount of money spent on the services of non-resident training consultants.

The Branch will undertake a major review of job evaluation standards, pay structures, benefits and terms and conditions of service for all staff and positions in the Vocational Centre.

Other work will include studying the possibility of introducing the four-day work week in certain work locations, reviewing the terms and conditions of employment for members of the judiciary and conflict of interest guidelines. Continued involvement with the new payroll/personnel computer software package will be of paramount importance to the Employee Benefits Branch. Audit procedures for functions delegated to line departments will be refined and implemented.

**Department of Renewable Resources**

***Departmental Objective***
To plan, manage and develop renewable resources to ensure optimum benefit to Yukon residents and visitors.

*Policy, Administration & Information Services Branch*

***Responsibilities***
This Branch is responsible for formulating policies for the management, conservation and use of renewable resources in Yukon; providing technical evaluations leading to the transfer of renewable resources to the Yukon Government; developing a sound data base for managing renewable resources; and providing educational information to the public about these resources.

***Review 1981-82***
The Policy & Information Services Branch was created as a result of the departmental re-organization in October 1981. Administrative Services was added to Policy & Information Services in December 1981. The Policy, Administration & Information Services Branch was closely involved in developing the new Wildlife Ordinance and Regulations in 1981, co-ordinating the establishment of the Agricultural Development Council and in preparing a draft Agriculture Policy. The Branch acquired data and word processing equipment in February 1982 to facilitate data storage and analysis for the Department. The Information and Education Officer conducted Firearms Safety Conservation Education courses in a number of Yukon communities, including Whitehorse, Teslin and Carmacks.

A casual employee was hired to overhaul and assess the Department's library, which has, until now, been unorganized and under-used. The Department has also hired a Stores Clerk who has been developing an inventory of the Department's equipment and supplies. A draft Agriculture Policy and a new Trappers' Compensation Policy were developed. The Branch continued its representation on a variety of committees and was actively involved in establishing an Internal Management Committee to deal with administrative, personnel and other matters involving the Department's three Branches. The Policy, Administration & Information Services Branch provides funding and support for the Yukon River Basin Study.

***Plans for 1982-83***
The Branch anticipates finalization of an Agriculture Policy, to be followed by preparatory work on an Agriculture Ordinance. It plans to produce a number of public information pamphlets, and to continue the Firearms Safety Conservation Education Program. A mechanism for reviewing, co-ordinating and developing departmental policies will be established.

*Wildlife & Parks Services Branch*

***Responsibilities***
The Branch is responsible for protecting Yukon's renewable resources and for ensuring that the objectives for their management are attained through the administration and enforcement of legislation. The Branch is also responsible for enhancing Yukon's renewable resources by planning and implementing resource-related development programs.

***Review 1981-82***
The Department of Renewable Resources underwent major re-organizational changes during 1981-82. The former Field Services Section of the Wildlife Branch and the Operations Section of the former Parks and Historic Resources Branch amalgamated to form the Wildlife & Parks Services Branch. The new Branch contains two main sections: Conservation Officer Services and Operations.

The Conservation Officer Services Section has been organized into three regions, with headquarters in Whitehorse, Ross River and Dawson City. A Wildlife & Parks Services warehouse was constructed in Mayo and construction on a new office warehouse complex was started in Dawson City. The new officers' staff quarters complex in Old Crow was nearing completion when it was destroyed during a fire in the adjacent school. A new mobile unit will be transported to Old Crow via a winter road in March.

Conservation Officers were again busy with enforcing the many statutes for which they are responsible; responding to public complaints; presenting educational programs; administering the Yukon's traplines, fur dealers and the outfitting industry; issuing licences and permits; patrolling trapping activities; providing assistance to technical staff and other agencies; providing administration of various regional and district offices; and performing a number of public relations functions. The Operations Section maintained 62 campgrounds, expanded others along the Dempster Highway and constructed new ones at Million Dollar Falls, Watson Lake and Cogdon Creek. In addition, the Branch provided stabilization and protection to various historic structures along the Yukon River, with much of the work being done at Fort Selkirk. The drafting of the new Wildlife Ordinance was completed in 1981. All 194 sections were assented to in December. A major commitment of staff went into the finalization of the new Ordinance during the months of August through to mid-December.

***Plans for 1982-83***
During the coming year in addition to carrying out its routine activities, the Department will finalize the new organization structure. Construction of the office/warehouse in Dawson should be completed as well as the campground in Watson Lake.

*Resources Planning & Management Branch*

**Responsibilities**
The Branch was established in October 1981 as a result of a major departmental re-organization. It provides a Research and Planning Service covering the use of Yukon's natural resources. The Service is delivered through a resource inventory, habitat assessment and regional planning process. The Branch is also responsible for preparing specific plans for managing wildlife resources, Territorial parks and outdoor recreation areas.

*Research & Planning Division*

***Review 1981-82***
The main effort of the Research and Planning Division was directed toward resource inventory projects. Field mapping of vegetation, surficial deposit, soil and aquatic features of lakes and streams was completed in the MacMillan Pass area during the summer period. Work continued on Southern Lake resource maps and the general report. The report and most maps are expected to be finished by March 31, 1982. Data from the resource maps for the Southern Lakes area are being prepared for input to the Lands Directorate computer system to assist in the production of interpretive maps for the Southern Lakes area.

The Division continued work on two major regional planning projects: the Dempster Highway Corridor and East Kluane Planning area. A contract for the completion of the Background Report and Concept Management Plan for the East Kluane area was awarded. These will likely be completed by March 31, 1982. A preliminary report from the study on spatial Data Handling Requirements for the Yukon was received. The final report and recommendations are expected before the end of the 1981-82 fiscal year.

The Division provides departmental representation on a variety of land use committees, related boards and panels to ensure that environmental concerns relating to Wildlife and Parks are being met. The Division formed a Habitat Evaluation Section; its one staff member will work closely with wildlife biologists and resource planners in the Department. During this year, the Biological Laboratory was brought under the administration of the Division.

***Plans for 1982-83***
Ongoing projects for the 1982-83 fiscal year include completion of the Dempster Highway Corridor management plan; completion of inventory maps of and the report on the Southern Lake and MacMillan Pass project areas, development of a habitat program and continued involvement in land use activities and evaluation process as they relate to Wildlife and Parks.

The following new projects are expected to begin under the resource inventory program: land use mapping, vegetation mapping in Carmacks-Ross River Corridor, snow depth mapping in the Southern Lakes project, critical sheep habitat identification, and archaeological study within the Southern Lakes area.

*Resource Management Division*

***Responsibilities***
This Division is responsible for managing the wildlife resources in the Yukon and the planning and management of outdoor recreation areas.

***Review 1981-82***
Annual surveys were carried out near Whitehorse to monitor the trends in several sheep and goat populations, which are under great hunting pressure and subject to disturbance. Investigations were continued on a sheep population, many of whose rams have formed horns. The Division is also investigating the distribution and frequency of the mandibular disease "lumpy jaw", found in all Yukon sheep and goat populations. The horns of all sheep shot by hunters were inspected, and analyses of horn growth rates in different areas of the Yukon are being carried out. Inventories were conducted in various areas including the MacMillan Pass area. A joint project to assess the potential impact of the Cyprus Anvil Mine expansion on the local sheep population was carried out with the mining company.

The 1981-82 fiscal year marked the final year of a three-year study on the range use relations and role of the Dempster Highway on the ecology of the Porcupine caribou herd. Normal monitoring activities on the movement of the herd were continued. It is expected that future monitoring work will stress determining the number of caribou in the herd and the rate of reproduction. The Division may also start a co-operative program to determine the "non-harvest" mortality rate. Work continued on studying the home range and movement of the Wernecke caribou herd in co-operation with Pan Ocean Oil Ltd. Studies also began on tracking the movement of caribou in the MacMillan Pass area. In the fall of 1981, work on a comprehensive inventory of moose in the southern Yukon was started. Results in four sub-areas indicated low to medium densities, with generally poor calf survival. Surveys started in March 1982 to delineate late winter habitats. Results indicate that some restrictions are required to ensure future populations of moose.

A number of projects to manage birds of prey were carried out in the Yukon. A raptor survey was carried out in the MacMillan Pass areas as part of a general wildlife inventory in the area. Management projects included re-introducing the peregrine falcon to the area and studies of the population and eggshell thickness of four perergine falcon groups. The Yukon Government also co-operated with the U.S. Fish and Wildlife Service in a study to chart the movement of bald eagles in relation to the Chilkat River wintering concentration. A co-operative two-year Canadian Wildlife Service/Yukon Government waterfowl study was begun in the MacMillan Pass area. Expanded studies in the Nisutlin Bay waterfowl staging area were done.

Management activities for carnivorous species were limited to investigating trophy hunting of grizzly bears and determining important bear habitat in alluvial riverside habitats. Problems associated with black bears adjacent to placer mining and developed areas continued to increase. Intensive field work on the 3-year marten study at Evelyn Creek was completed in 1981-82. Information was collected on home range, food habitats and habitat selection. A study of beaver movements and population changes was launched in Lapie Lakes and Nisutlin River areas. Beaver and wolverine carcasses were collected and analyzed for age, sex and productivity. An annual questionnaire was circulated to obtain the trappers' response to questions on population levels and trends associated with the Yukon's fur-bearing animals. The questionnaire will be complemented by fur-bearer inventory studies (winter track-census, and beaver and muskrat aerial surveys) in the Yukon River Basin and North Canol areas. The Division is continually involved in educating trappers, particularly on the subjects of humane trapping methods, pelt preparation and fur marketing. The Division is involved with the development and support of the Fur Institute of Canada, which will likely become operational in September, 1982. Developing humane traps is a primary component of the Institute's mandate. Under the General Development Subsidiary Agreement, the Division planned and monitored the implementation of five projects: Million Dollar Falls Campground, Watson Lake Campground, the expansion of Tombstone Mountain Campground, the Arctic Circle Crossing Point of Interest site and the installation of kitchen shelters at various campgrounds.

During the year, two draft park proposals were completed, one for Fort Selkirk Historic Park and a second for Coal River Springs Nature Preserve. A campground plan was completed for the Carcross area and a draft management plan for Chadburn Lake Park Reserve was completed and rests with the City of Whitehorse for comment. In addition, a safety proposal for Million Dollar Falls was initiated.

***Plans for 1982-83***

During the coming year, three projects are being continued — implementation of the Watson Lake Campground and Carcross Campground plans and the planning of safety measures at Million Dollar Falls. It is expected that master planning natural resources inventories will be developed for Kusawa Lake and Coal River Springs. A survey will be conducted on the North Canol Highway to locate suitable sites for campgrounds. Campground planning will be completed at Coal Mine Lake near Carmacks and at sites on the North Canol Highway. Finally, a site plan for expandng the North Klondike Campground will be started.

Plans for 1982 are to continue on all the bird projects noted earlier, excluding the MacMillan Pass raptor study. The Division will also carry out more surveys in the Stewart River drainage, and the southern lakes areas. A bird of prey interpretive program is planned for the Dempster Highway. Grizzly studies will continue and investigations to obtain information on black bears will begin. It is hoped that the moose and caribou projects can be continued, and a study is planned to determine why so few calves are surviving. Inventory of sheep will cover outfitting area 8 in the Wernecke and Anvil Mountains, and investigation into the horn and jaw diseases will continue. Inventories will be carried out in the southern Yukon on fur-bearing animals as part of the Yukon River Basin investigation. The formulation of species management plans will be initiated in 1982-83.

## Department of Heritage and Cultural Resources

***Responsibilities***

The Department includes the Yukon Archives and Records Services, which covers archival and records management for all Territorial Government departments; the Library Services Branch, which provides service to the Yukon public and to schools; and the Heritage Branch, which includes museums support services, historic sites development, archaeological regulation and an art gallery.

### *Yukon Archives and Records Services*

***Review 1981-82***

More than 3800 researchers used material from the Yukon Archives; the photographic technician processed orders for 1600 photographs and negatives. The Archives acquired 147 new primary collections and added 549 volumes and 529 pamphlets to the imprint collection. A major display entitled "Opening Yukon" was presented in November, and films were screened at various events in Yukon communities. An introductory workshop on archival methodology was co-sponsored with the Provincial Archives of British Columbia.

In Records Services, the largest records station was converted to modular shelving, which improved storage efficiency and reduced costs; 4686 new files were raised and 46 564 files were routed to departments. The Records Centre, which was completely reorganized, received 29.8 cubic metres of records and destroyed 64.6 cubic metres. The micrographics unit microfilmed the Workers Compensation Board assessment files, Renewable Resources data sheets and Health Services records for a total of 264 360 images filmed.

***Plans for 1982-83***

Plans for the coming year include the completion of retroactive accessioning in the Yukon Archives and the completion of the conversion of records stations to modular shelving. In addition, departmental schedules will be revised and a General Records Disposal Schedule will be published.

### *Library Services Branch*

***Review 1981-82***

Library Services Branch has a stock of approximately 150 000 items, and distributed 55 510 items to 59 outlets. The Branch filled 1 939 requests: 542 interlibrary loan requests from outside the Yukon and 1 397 requests from inside. Requests filled for particular books or kinds of books dropped by 9 per cent from last year's total of 2 139. Processing of new books during the year increased by 11 per cent to 23 168. Whitehorse Public Library loans increased by 7 per cent to 90 477, and audio-visual circulation was 9 612, an increase of 16 per cent. Overall circulation of all materials (excluding library materials distributed to schools) reached 139 177. In 1981-82, there were 9 065 registered users of Yukon's public library services.

During the year, the Learning Resources Centre organized its services and produced its first instructional materials catalogue. Teachers throughout Yukon used it to request 19 329 items, which were distributed to schools in the seven-month period ending in March. This joint venture with the Department of Education was a notable success. Staff helped organize a workshop for young authors, along with other events during National Book Week. The position of Territorial Librarian was filled in August after the incumbent resigned in May. Publication of the Branch's newsletter resumed after more than a year's lapse and a well-attended workshop for community library staff and board members was held in March.

***Plans for 1982-83***

When the new administration building opens in Mayo, it will offer improved library services to local residents. Plans for improvement also include upgrading of minimal facilities at Teslin to branch status. It is hoped that preliminary discussions and planning for Yukon Library legislation will also take place during the year. All of these plans depend upon the availability of funds.

### *Heritage Branch*

***Review 1981-82***

The four services in this program (museums support services, historic sites development, archaeological regulation and an art gallery) were consolidated in August of 1981. Supervision and design of sites projects under the Canada Yukon Tourism Agreement continued at Fort Selkirk, 30 Mile River, Carcross and Watson Lake, although project management remains with Renewable Resources and Tourism for the length of the Agreement. A director for the program was hired. The Art Gallery began a permanent art collection under an agreement with the Friends of the Gallery.

***Plans for 1982-83***

The Branch is reviewing legislation for protecting heritage resources. A plan and grants program for museums training and support will be developed. Capital Forecasts for sites stabilization and interpretation will be prepared.

## Department of Consumer & Corporate Affairs

The Department of Consumer and Corporate Affairs operates primarily through five Sections: Corporate Affairs, Consumer Services, Labour Services, Motor Vehicles, and Public Utilities.

### *Corporate Affairs Section*

***Responsibilities***

The responsibilities of this Section are to: facilitate credit transactions through registration systems in respect of personal property; formally establish charges and priorities of charges against property; facilitate business development and public protection through incorporation and registration mechanisms for business enterprises; provide a means by which non-business organizations (societies) may pursue their objectives through a corporate entity; and to regulate the trading of securities through registration and disclosure requirements.

***Review 1981-82***

In 1981-82, the Section processed 205 incorporations pursuant to the Companies Ordinance, 128 extra-territorial registrations, 2789 annual reports, and 4113* documents. In this period, 179 partnerships and trade-names were registered under the Partnership Ordinance, 25 societies and a co-operative association were incorporated, and 373 annual returns and other documents were registered. Finally, 31 registrations were effected for securities issuers, brokers and salespersons.

### *Consumer Services Section*

***Responsibilities***

This Section is responsible for protecting consumers and professionals through administration of standards for licensing and professional conduct. It administers Criminal Code provisions covering gambling; provides service to the business community and consumers by helping to resolve disputes and by educating both businesses and consumers about their respective obligations. The Section also provides an information service including metric information for consumers to help them evaluate goods and services in the marketplace. This information service also publicizes consumer-oriented services available from the Government and other sources.

***Review 1981-82***

Licences issued in the 1981-82 fiscal year are as follows: Business — 569; Insurance — 195; Medical Profession — 58; Chiropractic — 3; Dental Profession — 13; Dental Hygienist/Therapist — 11; Legal Profession — 179; Optometrist — 3; Pharmaceutical Chemist — 10; Real Estate — 43; Notary — 47; Lotteries & Games of Chance — 192. The unit also received the following number of complaints and inquiries: Consumer Complaints & Inquiries — 209; Landlord/Tenant Complaints and Inquiries — 350.

### *Labour Services Section*

The former Manpower and Labour Branch was re-organized during the year. The Manpower Planning and Womens' Bureau Sections of the Branch were returned to the Department of Education.

Labour Services is involved in the administration of the Occupational Health and Safety, Labour Standards, Fair Practices and Employment Agencies Ordinances/Regulations, and related labour issues.

***Responsibilities***

The responsibilities of the Section are generally to ensure that minimum standards of employment are maintained in the work place; by promoting awareness of and compliance with the Labour Standards Ordinance; to change discriminatory attitudes and promote awareness and compliance with the Fair Practices (Human Rights) Ordinance to prevent wrongful discrimination; to improve occupational health and safety standards in the work place by promoting awareness of and compliance with the Accident Prevention Regulations, Mining Safety and related legislation; to regulate the operation of employment agencies; and to provide resources to Government on other labour issues.

***Review 1981-82***

The Government tabled a Green Paper on Employment Standards and referred it to the Select Committee on Legislation. The Committee conducted public hearings on the proposed amendments to the present Labour Standards Ordinance and reported to the Government in March 1982.

The Government tabled another Green Paper on Occupational Health and Safety and referred it to the Select Committee on Legislation, which conducted public hearings on the proposed amendments to the present Accident Prevention Regulations of the Workers' Compensation Ordinance.

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*Excludes registrations for the last month of 1981-82.

Labour Services Officers received 286 complaints under the Labour Standards Ordinance and responded to approximately 900 enquiries. The Section collected $128 198.93 in wages; an additional $57 468.86 in Court Orders for the Payment of Wages remains uncollected at the end of the fiscal year.

To assist Fair Practices Officers in resolving complaints under the Fair Practices Ordinance, an interim, Internal Fair Practices Review Board, was established. The Board investigated seven complaints under the Fair Practices Ordinance. One Order was issued by the Commissioner.

Occupational Health and Safety Officers completed 136 inspections under the Accident Prevention Regulations, answered 120 inquiries, conducted 15 health surveys and contacted more than 750 workers.

### *Motor Vehicles Section*

***Responsibilities***

This Section is responsible for maintaining a vehicle registration and identification system and a driver licensing testing program. It also keeps records of the performance of individual drivers for use by the courts when sentencing. These records are also used by insurance companies for rating purposes and by other agencies, such as the RCMP for program planning. Finally, the Section administers Motor Vehicles legislation in the Territory.

***Review 1981-82***

Revenue and licensing statistics for 1981-82 were unavailable at the time of writing. A substantial increase in revenue is anticipated over 1980-81 levels.

### *Public Utilities Administration Section*

This Section was established in July of 1981 to provide policy, technical, and administrative support to the Yukon Electrical Public Utilities Board and the Transport Public Utilities Board.

***Responsibilities***

The Electrical Public Utilities Board regulates the operations of "electrical public utilities" in the Yukon. The Board regularly reviews rate adjustment proposals submitted by the Yukon Electrical Company Limited and the Northern Canada Power Commission on behalf of Yukon consumers. Beyond rate matters, the Board has the power to hear and determine any matter relating to the production and transmission of electricity to the public.

The Transport Public Utilities Board regulates the motor transport industry and may "enquire into, hear and determine any matter or thing respecting provisions of motor transport services to the public".

***Review 1981-82***

The Electrical Public Utilities Board received three applications for rate adjustments: one from the Yukon Electrical Company Limited, and two from the Northern Canada Power Commission. A public hearing was called in June to deal with these matters. Arising from the applications, the Board issued four Orders: one to the Yukon Electrical Company Limited, and three to the Northern Canada Power Commission. A second hearing into Northern Canada Power Commission proposals was held in March 1982.

Tanker Truck, Whitepass Gas Depot, Y.T. Photo by Pat Morrow, 1982

The Board began a major review of electricity rate structures during the year. The review is expected to be completed during 1982-83.

The Transport Public Utilities Board held five Public Hearings during the year to deal with 61 applications for operating authority.

The Board has begun to solicit public input as part of its broad review of motor transport policy in the Yukon. This review is expected to be completed early in 1982-83. Any policy or legislative changes that appear necessary as a result of the review will then be adopted or proposed by the Board.

## **Department of Government Services**

### *Administration*

***Responsibilities***

This Department Co-ordinates general services for the various departments within the Yukon Government and consists of four main Branches: Systems and Computing Services, Supply Services, Public Affairs, and Property Management.

***Review 1981-82***

The Department assumed responsibility for Property Management in May 1981. (This responsibility had previously rested with the Department of Highways and Public Works.)

### *Systems and Computing Services Branch*

**Responsibilities**
The Branch provides a systems analysis and design service as well as an electronic information processing service to all corporations and government departments. The branch also co-ordinates related activities which utilize non-government resources.

**Review 1981-82**
Major activities included converting existing computer systems to the new central installation, implementing a new payroll system, installing a Human Resources Client Index system, developing a Personal Property Security Registration and offering more computing services to end users. The systems group was expanded to provide more management systems services to the departments. Some word processing capability was introduced, as a first step in implementing the office automation plan.

**Plans for 1982/83**
This Branch will continue to provide a systems-oriented management consulting service and computing services to end users. It will also work to reduce the project backlog and co-ordinate word processing training.

### *Supply Services Branch*

**Responsibilities**
The Branch provides a pool of resources to all government departments and Crown corporations, encouraging greater efficiency and economy of scale in areas such as purchasing, capital asset control, transportation, communications (Mail services and telex/dex), printing services, warehousing, safety and security.

**Review 1981-82**
The Central Transportation Agency implemented a reservations section that processes all government travel requests for scheduled air service, hotel accommodation and vehicle rentals. A transportation system (Handybus) was implemented in the Whitehorse area especially for elderly and disabled persons.

During the year, purchase orders were issued for $17.8 million; service contracts for $11.4 million and Local Purchase Orders for $0.9 million. More than 73 per cent of all purchases were made through Yukon businesses.

The auctions of surplus material returned $149 195 to the Government. Throughout the year, 22 such auctions were held.

With Central Transportation co-ordinating government vehicles, the utilization of the fleet increased by 400 per cent.

Upgraded printing facilities currently produce 9 500 000 copies of printed material for the various government departments. The first edition of a new Yukon Gazette was published.

The Central Stores Warehouse processed 4 108 departmental requisitions for a dollar value of $283 170 from an inventory of 1 100 items.

A security and safety component was transferred to Supply Services during the year, and it continued its safety education program including training programs in first aid, winter survival, defensive driving and fire extinguisher drills. It also continued its inspections of government establishments. During the year, a marine safety manual was developed for ferry operations in the Yukon. The Emergency Measures Organization offered assistance in a local flood at Rock Creek involving 60-70 residents. It also responded to other emergencies, such as flooding in the Carcross community and the destruction of the school in Old Crow, which resulted in a brief electrical power outage in that community.

**Plans for 1982-83**
During the upcoming year, the Branch plans to establish a schedule for computerizing its inventory and asset control functions. Printing services plans to extend its graphics and design consulting services to all departments. Safety and Security will develop an emergency communication package to improve the ability of communities throughout Yukon to respond to emergencies.

### *Public Affairs Bureau*

**Responsibilities**
The Public Affairs Bureau provides a central, in-house service to all government departments, Crown corporations and agencies by providing public information and education about government programs and activities. These services are provided through three Sections: Information Services, Photography and the Inquiry Centre.

**Review 1981-82**
The Bureau is committed to improving the Government's information programs. Accordingly, it assumed more responsibilities and significantly increased the level and quality of public information programs. Its responsibilities now include preparing public communications strategies as a required attachment to all Cabinet submissions on policy and legislation. It also produces numerous publications on government programs and activities, including a monthly government newsletter.

In 1982-83, the Bureau produced more than 300 press releases, several feature articles, a bi-monthly employee newspaper, audio/visual presentations and a quarterly government directory. The Bureau also handled the production and placement of most government advertising, including several multi-media campaigns, and helped to developed exhibits and displays.

A cost-sharing agreement was reached with the Government of Canada for the operation of a public Inquiry Centre, which handled 120 000 telephone, mail and counter inquiries. In 1981, the Public Affairs Bureau hosted the National Government Information Director's Conference in Whitehorse and the Inquiry Centre assumed responsibility for the sale and distribution of government ordinances and regulations.

***Plans for 1982-83***
In the upcoming year, the Bureau plans to sponsor a series of in-house media relations seminars for government employees and will continue preparing a guideline manual for use of the Yukon Government Wordmark. The Bureau also plans to re-assess and update the central photographic library, review the effectiveness of government advertising in relation to the media being used, and continue its ongoing activities at the present level.

*Property Management Branch*

***Responsibilities***
This Branch acquires and allocates office space for all government departments throughout Yukon (with the exception of Yukon Housing and Yukon Liquor Corporation). It also provides building maintenance, janitorial and security services. Property Management co-ordinates and assesses departmental requests for additional space or alterations to existing accommodation. The main objective is to provide suitable office accommodation and ensure the maximum use of government-owned and leased premises.

***Review 1981-82***
Custodial duties were re-organized; two person years were cut from the staff. The Branch signed a lease agreement for the new Inter-governmental Affairs office in Ottawa. New office space was provided for the Commissioner and the administrative staff of the Department of Heritage and Cultural Resources.

***Plans for 1982-83***
Plans for some renovations with the Administration Building have been discussed for the 1982-83 year. This will mean relocating some departments as well as creating private office space for the MLA's. A conference complex is also being planned.

### Yukon Workers' Compensation Board

***Responsibilities***
The Workers' Compensation Board administers the Workers' Compensation Ordinance and adjudicates all matters arising under that Ordinance. The board guarantees that compensation and pensions awarded to injured workers or their dependants be paid for as long as they are entitled to receive these benefits.

In co-operation with the Yukon Department of Justice, the Workers' Compensation Board administers the compensation under the Victims of Crime Ordinance, to ensure that victims of crime or their dependants who are faced with financial difficulties as a direct result of a criminal incident receive any compensation to which they are entitled.

***Review 1981-82***
A total of 2018 claims were reported during 1981, compared with 1939 in 1980. Increases in the amounts of compensation resulted from Section 79 of the Ordinance. Section 79 increases the amount of compensation in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1981, was 12.5 per cent. During 1981, 1963 employers were registered, compared with 1782 in 1980.

### Yukon Housing Corporation

***Responsibilities***
The Yukon Housing Corporation develops, provides and operates various housing projects and programs throughout the Yukon Territory. The Corporation's client group extends to many segments of the population, including low and modest income individuals, families, senior citizens and staff of the Yukon Government.

The Yukon Housing Corporation has a commitment to encourage private home ownership.

***Review 1981-82***
In 1979-80, all of the Yukon Housing Corporation's community and staff housing units were surveyed to assess their insulation. A five year insulation retrofitting program for the Corporation's housing stock resulted from the survey. In this second year of the program (1981-82), a total of 62 housing units had their insulation upgraded. As well, the Yukon Housing Corporation built two highly energy-efficient, detached staff houses in Haines Junction, reflecting its commitment to encouraging energy conservation.

On April 1, 1981 the Corporation, upon direction from the Yukon Government Cabinet, discontinued provision of Staff Housing to Yukon Government employees in Whitehorse.

***Plans for 1982-83***
Plans are underway to build a 22 suite, energy-efficient staff apartment in Faro. This building, consisting of 17 two-bedroom and 5 one-bedroom units, should be available for occupancy in December of 1982. As well, the third year of the insulation retrofitting program has been planned.

### Yukon Liquor Corporation

***Responsibilities***
The Yukon Liquor Corporation regulates imports and distributes and retails alcoholic beverages within the Yukon. It ensures that the requirements of the Liquor Ordinance, the attendant regulations and the goals and objectives of the Corporation are met. It also issues, cancels, and suspends liquor licences, enforces the Ordinance, carries out inspections and deals with all other matters relating to controlling the sale of liquor. Unlike government departments, the mandate for a Crown corporation is laid down through legislation, making the Corporation responsible to the legislature for its operation. The Auditor General of Canada audits the Yukon Liquor Corporation.

The Board of Directors, appointed by the Government, is the Corporation's legal entity. Board members are part-time appointees and reside in different parts of the Yukon (Mayo, Haines Junction, Watson Lake and Whitehorse). The Board of Directors has assumed all legislated responsibilities and is involved in corporate business activities, drafting by-laws and setting budget policies. As the Crown corporation is under the joint control of the government and the Board of Directors, the Chief Executive Officer directs, supervises and controls the general direction of the Board on behalf of the Government. This arrangement allows for visible separation from day-to-day control by Government and frees the Board of Directors from political pressure, while allowing the Government to remain accountable to the public. The Minister responsible for the Corporation answers to the legislature for the corporate mandate received from that body and to the Government for matters involving major policies.

### Review 1981-82

*Administration*
New and amended regulations were passed that opened Board meetings pertaining to licences to the public. These regulations also prohibited the purchase of off-sales liquor on credit except in special circumstances; and authorized the Board to regulate the hours of sale for an off-premises liquor licence.

*Accounting*
Technology and electronic management is rendering manual computation of stock and sales obsolete, particularly at the retail level. The Corporation has begun to introduce computerized cash registers to its liquor stores and the Central Warehouse. The Whitehorse Store, the first to use the Point of Sale System, experienced a smooth transition from a manual to a computer-based system. Thorough training of staff greatly contributed to the successful change-over.

*Operations*
The Head Office and Central Warehouse are located in one building in the Marwell area. A total of 43 staff members work at Head Office and operate the Central Warehouse and six liquor stores. Liquor stores are located at Whitehorse, Haines Junction, Dawson, Mayo, Faro and Watson Lake. The retail sales of the Corporation function like a private retail enterprise. All liquor imported into the Yukon is received at the Central Warehouse for transfer to the six stores. As well, licensees in Whitehorse and highway lodges are served from the Licensed Outlet Store within the Warehouse. Retail prices are identical in all liquor stores and the Central Warehouse. It is the government's policy (regulated) that licensees situated outside a 25 mile radius from a liquor store or warehouse receive prepaid shipments in order to help alleviate higher costs in isolated areas.

Canadian liquor products are ordered frequently throughout the year and arrive regularly by White Pass ship and rail, allowing maximum turnover of stock. Overseas products are ordered from more than twenty countries. These items are ordered in large quantities twice annually, with intermittent orders as required, in order to take full advantage of containerization at the European docks.

*Liquor Sales Throughout the Yukon, including Surcharge*

| | 1980-81 | 1981-82 |
|---|---|---|
| Spirits | $ 5 984 190 | $ 6 717 395 |
| Beer | 5 414 958 | 6 720 368 |
| Wine | 1 917 044 | 2 026 722 |
| Total | $13 316 192 | $15 464 485 |

A total of 7 864 tons of liquor was handled and 715 154 dozen empty beer bottles were returned. Liquor consumption amounted to 884 962 gallons.

*Licensing and Inspection*

| *Liquor Licences Issued* | *1980-81* | *1981-82* |
|---|---|---|
| Liquor Cocktail Lounge | 45 | 42 |
| Beer Tavern | 10 | 10 |
| Dining Room | 37 | 39 |
| Restaurant Beer and Wine | 35 | 32 |
| Liquor Off Premises | 66 | 56 |
| Beer Off Premises | 31 | 31 |
| Club Liquor | 9 | 11 |
| Beer Canteen | 4 | 4 |
| Special Liquor | 5 | 5 |
| Aircraft Liquor | 2 | 2 |
| Room Service Liquor | 19 | 18 |
| Mess Liquor | 2 | 2 |
| Total | 265 | 252 |
| Special Occasion Permits | 526 | 500 |
| Reception Permits | 116 | 159 |

There were eleven applications for new licences. Four liquor licences were suspended during the year. A total of 1 267 inspection visits were made to licensed establishments and 659 liquor permits were issued to the public.

| **Summary of Direct Northern Expenditures (000's)** | **$** | **%** |
|---|---|---|
| *Total Forecast 1981/82* | 146 488 | 100.0 |
| *Expenditure by Northern Objective:* | | |
| Quality of Life | 77 894 | 53.2 |
| Economic Growth | 31 988 | 21.8 |
| Evolution of Government | 15 608 | 10.6 |
| Administration and Support | 14 151 | 9.7 |
| Protection of the Environment | 4 111 | 2.8 |
| Leisure and Recreation | 2 035 | 1.4 |
| Social and Cultural Development | 701 | 0.5 |